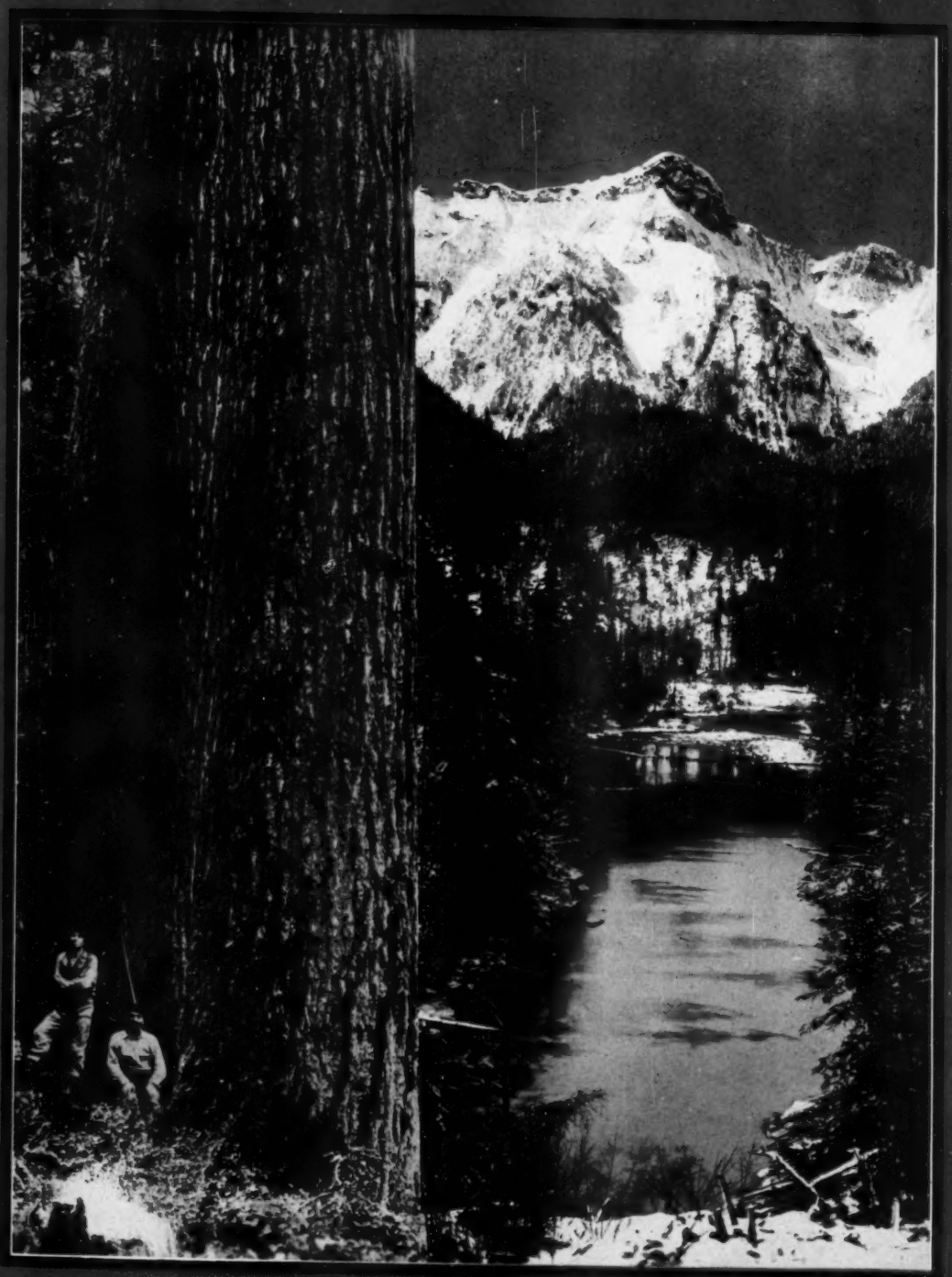
American FORESTS



AUGUST 1934

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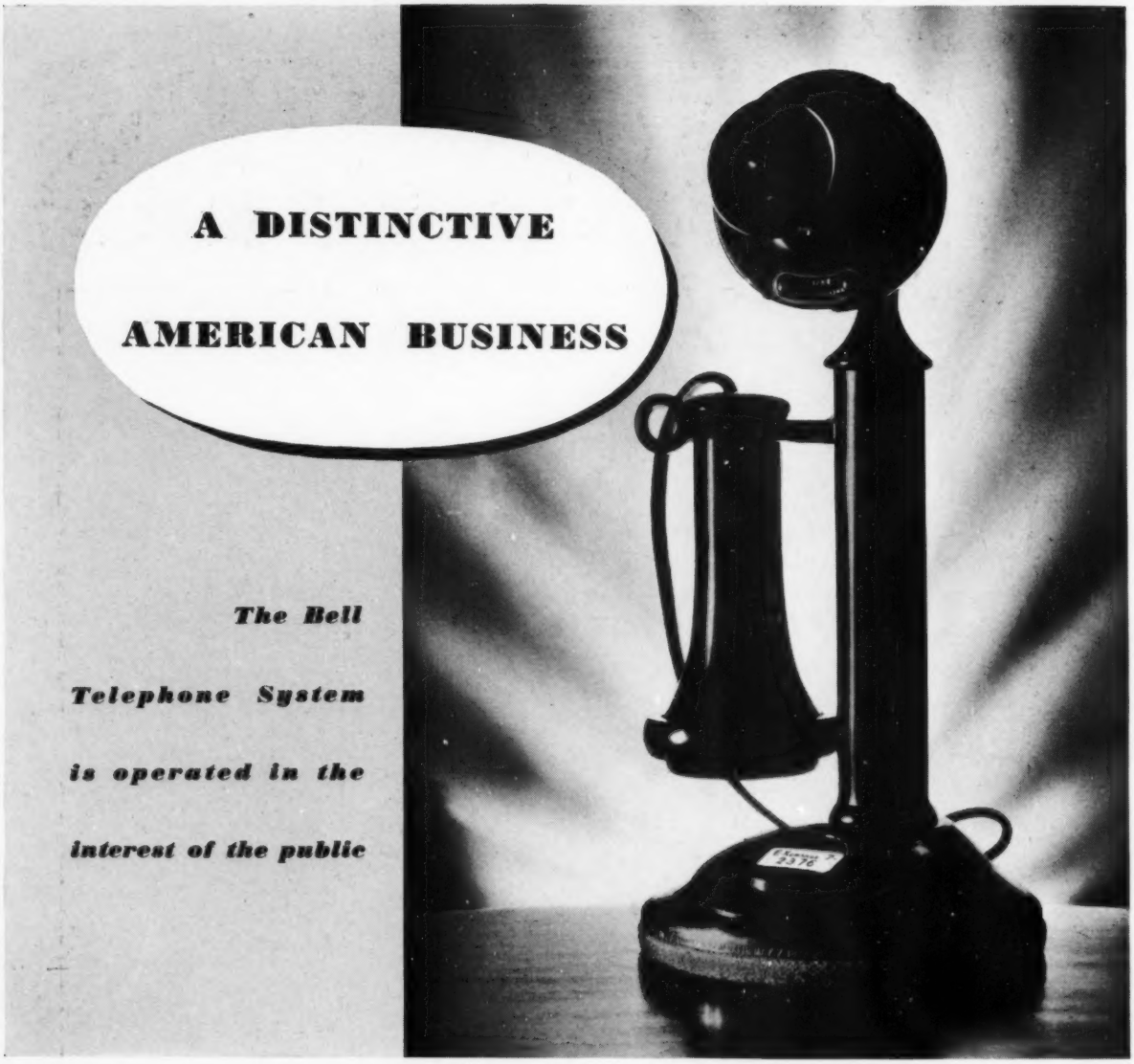

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AMERICAN FORESTS

OVID BUTLER, Editor
L. M. CROMELIN and ERLE KAUFFMAN, Assistant Editors

CONTENTS FOR AUGUST, 1934

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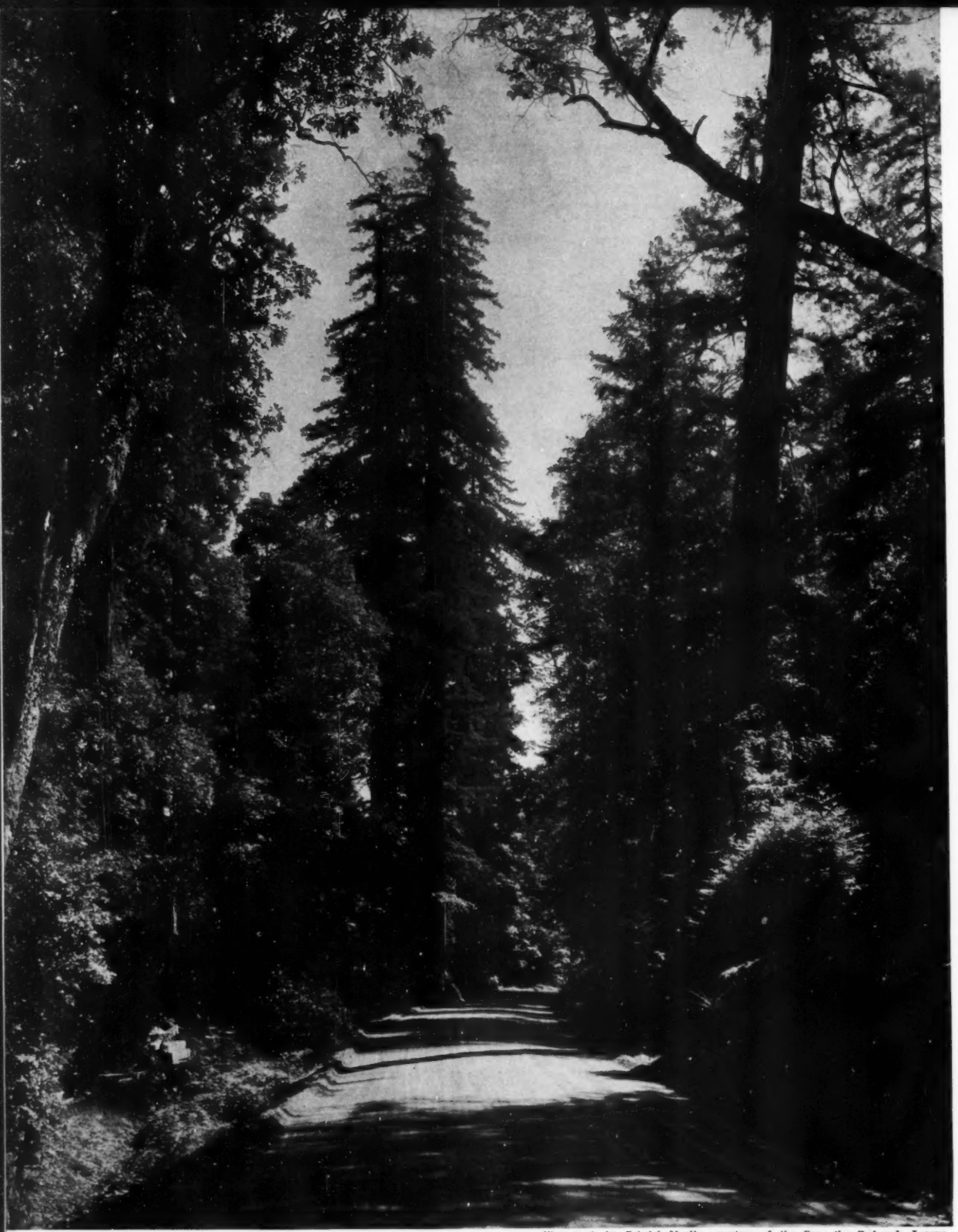
Member A. B. C.

COMPARISONS

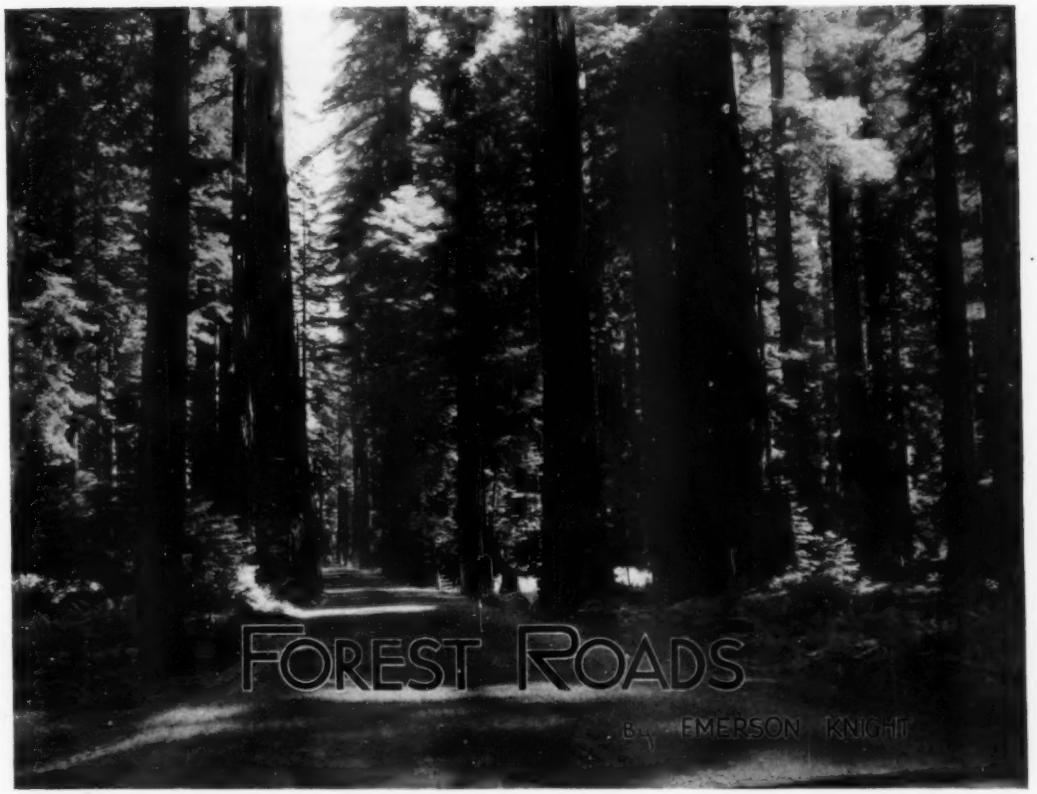
If God is to a giant tree
What a great tree is to man
I will measure my stature to a fir
And ponder on God's plan.

—Ethel Romig Fuller



Photograph by Gabriel Moulin, courtesy of the Save the Redwoods League

In primary forest highways, adapted to through traffic of heavy volume and speed, it is essential to preserve as far as possible the forest environment. One important means to this end is the long radius curve, perfectly exemplified here on the Redwood Highway in Humboldt County, California.



ANIMALS, probably, were the earliest instinctive locators of grades and courses of travel, which frequently since have been accepted and followed by man in the building of permanent roads. All the more primitive vehicular ways were routed through the forest in a manner as direct and convenient as possible, but it was rarely necessary to cut large trees. Instead, the road swung around the massive, stately specimens, leaving them in the vista to be permanently enjoyed. It was the flowing, winding character of these old-time highways which imbued them with charm, so that they live in recollection, song and story as lovely sylvan pictures.

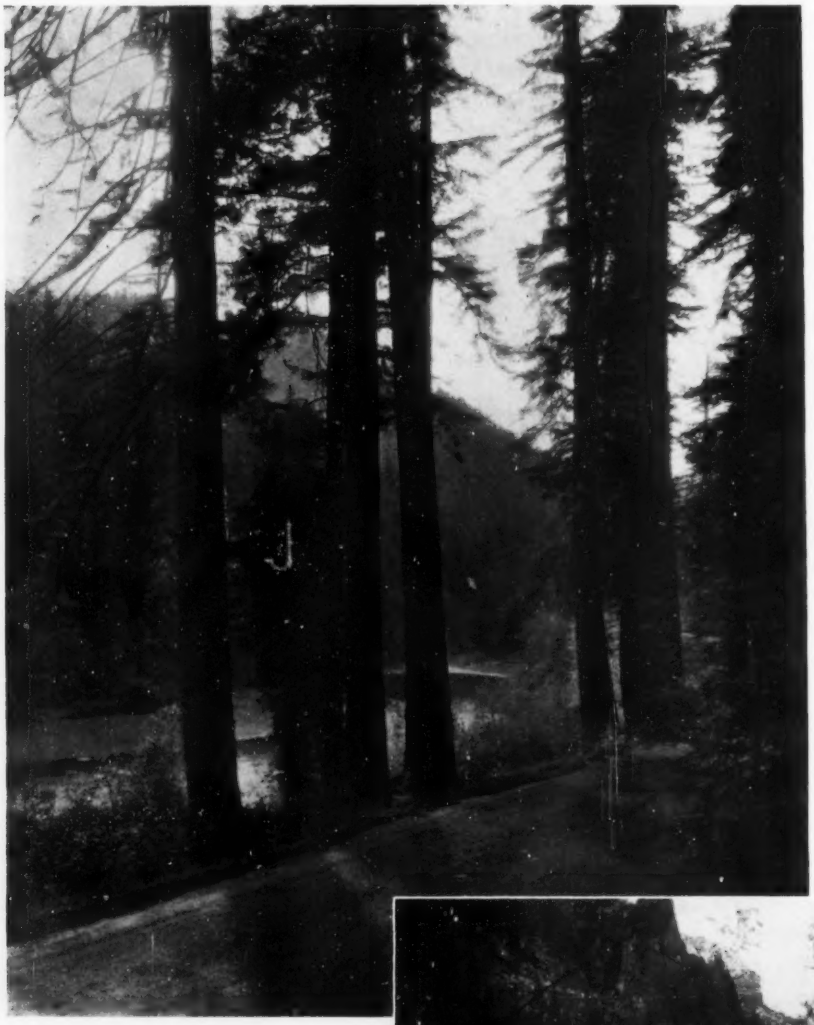
Conservation of the inherent beauty of the forest is the most vital consideration in locating and constructing essential forest roads. When recreation is the prime objective, the routing of the woodland course should be conducive to the fullest enjoyment of its scenery. But when any road built for either fast or slow travel is so treated as to destroy in any marked degree the primeval forest in its original state, the resulting highway will tend to defeat its purpose. When a road passes through private holdings it is important to secure a right-of-way wide enough to insure a lasting forest picture on both sides, even after the adjoining private timber is felled. Scenic easements might aid in solving such problems.

Forest roads may pass through private lands, National or State Forests, or National, State and County Parks. They may be conveniently discussed under three types: Primary forest highways or speedways, secondary roads for county, utility or recreational use, and seldom used or seasonal roads for special purposes such as camping.

Primary forest roads are for through traffic of heavy volume. Serving practical needs, they should be reasonably direct with minimum grades and long radius curves. While they must provide for high speed, their general position and precise location should be studied with scrupulous care, so as to inflict the least degree of damage upon the forest environment. Since this type of highway must have a broad right-of-way there is serious danger of removing a swath of trees so wide as to create a decisive slot or gash, resulting seemingly in a separation of the forest or park into two distinct halves or units. One possible means of overcoming such an effect will be that of avoiding long tangents in the survey, because curves, when of long radius, offer the observer less conspicuous sky gaps in the trees. Such curves dispel monotony and stimulate in the motorist a sense of beauty.

Grades should be moderate and established in a manner exposing the minimum evidence of extraordinary cuts and fills. Distribution of cut material by hauls longer than were formerly in practice will lead to improved conditions and a more uniform aspect. Borrow pits should be concealed or eliminated. The berms or shoulders should be broad, firmly built and extremely well protected. A careful handling of cut slopes and embankments, both in construction and planting, will result in a pleasing appearance —a union of practical utility with aesthetic enjoyment. Ample parking spaces should be provided for safety when pausing at springs, picnic areas, where important trails lead off, and where scenery is notable or extraordinary.

Secondary roads, especially those in large forests or parks, can relieve the traffic volume of the main arteries by offering recreationists greater enjoyment of the scenery at more moderate speed. If routed through remote portions of timber stands a feeling of deeper intimacy with nature may be gained. If the trees are notable in size or grandeur, such as the conifers of the West—the pines, firs, spruce and redwoods—a careful study of the routing should be made in



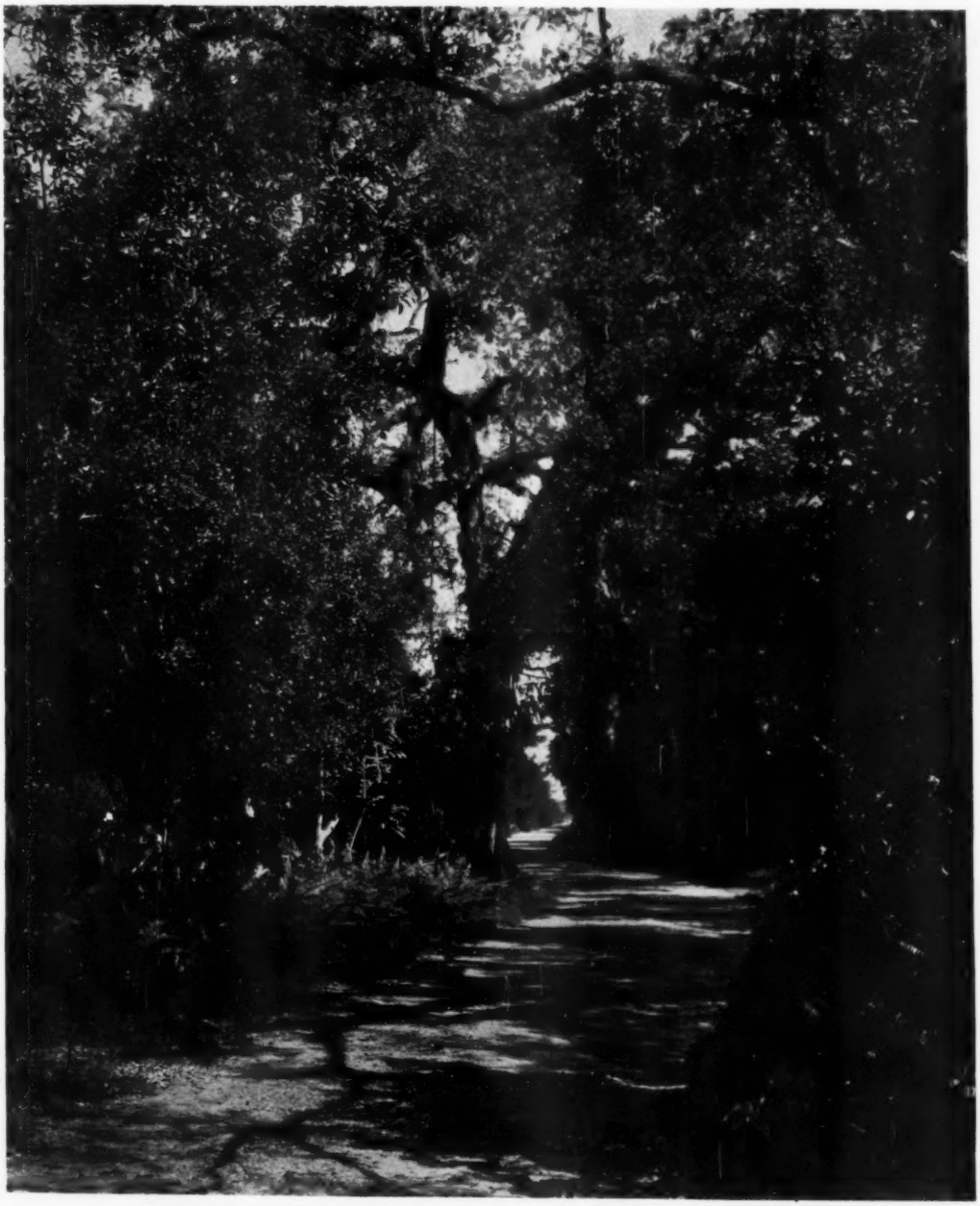
Secondary forest roads are naturally narrower. Designed to relieve the traffic volume on main arteries, they also offer opportunity for the creation of a deeper feeling of intimacy with nature. Careful routing and treatment of such roads can result in revealing miles of otherwise inaccessible woodland beauty, especially where—as in these instances—the road follows along a wooded river bank or the shores of a mid-forest lake or stream.

order to reveal the exceptional beauties of the groves. The scene character will shift as the road follows a wooded river bank or the shores of a mid-forest lake; the confines of the timber or along tree-clad ridges or summits. Some of the finest units of the course will be integral with the forest as the one impressive theme. Such secondary roads will certainly be narrower than the primary ones and can, in consequence, take on a more winding route, allowing for somewhat steeper grades and more abrupt changes in the scenery. Care should be taken to restrain tree cutting to the lowest limit. In order that such roads may retain with fidelity conditions primeval with a sense of isolation, it is urged that they be located with the fewest possible reverse curves, especially the kind which would expose several lower turns simultaneously from a dominant position above. In such cases, the sound of motors, horns, or voices from below, not only rudely breaks the stillness, but further utterly destroys the illusion of being afar off in the heart of a wilderness forest. With fitting purpose some of these roads can be built exclusively for one-way traffic, so that the traveler can know the zest of a complete cycle of views, and a continuously unfolding story, from the point of departure from a major road, until the moment of rejoining it.

For the leisurely enjoyment of remarkable panoramas, or picnicking and camping, areas should be provided generous enough to accommodate the maximum probable number of cars necessary to be parked at one time. Stout curbing walls or guard rails should protect such spaces in the most dignified and unobtrusive manner, the materials preferably being logs, hewn timbers, hedges of native plants, or indigenous stone.

United States Forest Service

Above, to left—a riverside stretch of the Redwood Highway in California. Lower—a lovely winding road in the Wasatch National Forest in Utah.



In State forest and park roads, it is best to hold to original forms and maintain the integrity of natural beauty in special local landscape, such as occurs in the semi-tropical allure of this road in the Royal Palm State Park in Florida.

Seldom used, seasonal, or minor forest roads should adhere more closely to nature's contours than all other types and, consequently, might bear least the impress of the engineer's or builder's work. Leading to remote spots for views, picnicking, or camping, they should, however, be located with great care, so as to maintain an environment as little disturbed as possible. Usually they will be narrow and will allow for occasional fairly sharp curves and steep grades. Being often for one-way travel they should be widened at intervals for passing. One type might be a road climbing abruptly away from a primary or secondary road to a high meadow or flat whence the view excels, or where camping conditions are happy. Another type would lead downward from forested riverside cliffs to the lower benches, sandbars and pools of a stream. A third kind might lead up a steep, narrow canyon to a cienaga, or invitingly open, wood environed spot, ideal for camping and picnics. Lastly, there is justification for such a road through a wilderness area, terminating at a lookout point commanding a wide and noble prospect.

The road proper with its shoulders and adjoining slopes, constitutes the right-of-way, the whole of which should be so treated as to become harmonious and integral with its setting. In constructing roads over steep topography, where decisive cuts and major fills are compulsory, due care should be taken, first to remove all existing loam or top soil to one side, and later replace it on the slopes above and below the traveled way, after the grading—including the toning down of the sharp edges, is completed. This will provide earth for the growing of grasses, prostrate shrubs or wild flowers on the upper slopes, and for creepers, shrub masses or small trees on the slopes below. Such plant materials should serve as a binder, first to retard erosion, and finally to stop it almost entirely. These types of planting will offer for the eye a comfortable and pleasing transition from the road to the forest on either hand. Thus far, in western America most of the cuts have been left raw in rocky, clay, or arid soils, leaving extensive bare scars persisting for a great

many years, if not permanently. Fortunately, a more enlightened method of handling and planting such areas is gradually replacing this sterile practice.

The motorist should be well protected against slipping or rolling over abrupt slopes to dangerous depths. Permanent barriers should be built wherever risk obtains. Walls of stone offer a strong sense of security and will evidence vigorous beauty when well designed, but they are sometimes prohibitive in cost. Next in favor and in certain circumstances even more suitable, are ponderous logs cut from fallen trees. Heavy fences of hewn wood might also seem conformable to the forest, with posts fully eight inches square and rails in proportion. A twin type of barrier might employ logs, screened on the inner or road side by a low, native hedge. Then should a car swerve and crash the hedge, the latter will in some degree absorb the shock before the car's impact with the stout logs behind. White fences should be avoided if and when more congruous materials can replace them.

Minor forest roads, designed to lead to more remote spots, may be held even more closely to nature's contours, so that the minimum of natural environment is destroyed. Usually narrow, their charm lies in the complete harmony of their setting. This is a State road near Lake Chocorua, in the White Mountain National Forest.

This alluring road in Maine serves a double purpose—it maintains and emphasizes its atmosphere of seclusion, through its wooded environment, which acts at the same time to obscure the utility and power poles faintly to be discerned at the side of the road.

Extensive forest parks possess great potentialities for large numbers in search of recreation. The majority of citizens of this decade are not in the habit of much walking. For most of these who are able bodied, as well as the aged and delicate in health, the treasures of the forest can be adequately revealed only through motoring over roads. A few rambling routes might eventually penetrate some of the choice areas of a given timbered region, by gentle grades and winding curves, the planners studying to avoid marring the topography and its forest cover. Such roads, developed only to meet recreational needs, should not be built until after a thorough investigation of the entire region—with the aim of a happy distribution that will least disturb nature and yet offer the highest degree of recreational use and aesthetic pleasure.

Each separate road requires individual study in order to solve its problems. The work of the highly trained engineer should be counterpoised by that of the landscape architect of like calibre. From the very inception of the road project, including the reconnoissance, positioning, precise location, design, construction, subsequent treatment and maintenance, these two professions should serve in full collaboration. Not even the smallest phase of the cycle should be advanced without their united approval. The natural beauty of forest environment should be preserved with integrity while simultaneously unfolding pictures in logical sequence. When the surrounding timber is owned by the Federal or State government, in reserve or park form, it will be possible to retain the original state of nature much more closely than in cases where the road passes through private lands.

Exceptional forested wilderness regions of austere beauty or secluded intimate character should be held inviolate, for access by trail only. In decided contrast to those who ride, there will be rewards for all who are willing to expend energy in walking and climbing. These, lured by nature in her shyer moods, will make pilgrimage afoot to high and remote spots where arduous exercise will be contrasted by silence profound and solitary grandeur.

Human sensibilities have sometimes been attributed to trees. In a French song, "*The Oath of the Forest*," the trees are pictured as rallying under the protection of their chieftain, the mighty oak, to withstand the approach of the ax-men, who stride beside their wagon as they press on into the forest depths. The trees, mute and helpless, are overcome with fear and trembling. Certainly, if those of the forest commonwealth shuddered at the thought of yielding up their spirits in the middle ages and pioneer days, when they were employed only to build shelter for man and beast, and as fuel to warm them—how much greater must have been their alarm when not only hundreds but even thousands of their kindred were razed to the ground and often burned—just for the building of roads.

More thoughtful citizens believe that roads need not necessarily be built with long, rigid tangents, even to insure safety at high speed, and that as a result of care and study over their location and grades and the right use of long radius curves, it will be quite possible in the future to avoid cutting and thus preserve an infinite number of specimen trees. Then stalwart younglings, giants in the (*Continuing on page* 377)

A TREE BELT FOR THE PRAIRIE STATES

Huge Project to Provide Shelter Belt Plantings in 100 Mile Strip From Texas to Canadian Border

PRESIDENT ROOSEVELT, on July 21, approved the most unique and daring forestry undertaking in the history of the country. Details of the plan have been worked out by the United States Forest Service which will launch the work immediately with Assistant Forester Fred Morrell in charge and Raphael Zon, Director of the Lake States Forest Experiment Station, as technical advisor.

The project calls for the planting of trees in strips seven rods wide running north and south and one mile apart in a belt of Prairie country 100 miles wide extending 1,000 miles from the Canadian line to northern Texas. Within the belt, the total area to be planted approximates 1,800,000 acres.

The purpose of the undertaking is two-fold. First, to provide immediate employment for drought stricken families in the Prairie drought area; and second, to protect the Prairie farms permanently against the desecrating winds that rob their lands of soil and moisture and make farming highly precarious and uncertain. Ribbons of forest a mile apart bisecting the Prairie region, it is held, will break the velocity of the winds over a wide territory, will help hold the soil and moisture in place and will provide shelter for man, beast and bird.

The proposed 100 mile wide shelter belt would begin on the Canadian border in Rolette, Towner and Cavalier counties in North Dakota and would extend almost directly south through central South Dakota and Nebraska, western Kansas and Oklahoma, terminating at Motley, Cottle and Hardeman counties in northern Texas. The belt parallels closely the Prairie region of eighteen to twenty-five inch rainfall which experience has proven makes tree growth possible.

Ten years is estimated to be required to complete the work, the total cost of which is placed at approximately seventy million dollars. An expenditure of $10,000,000 is contemplated the first year and an executive order approved by the President makes this sum immediately available from the $525,000,000 emergency fund appropriated by Congress for drought stricken agricultural sections of the country. It is estimated that ninety per cent of the money will go to farmers in payment for lands purchased and in the form of wages for work performed in planting and in caring for plantations. Some fifteen Civilian Conservation Corps Camps are contemplated to provide work for farm boys in connection with the development and operation of the necessary nurseries.

The shelter belt strips of trees seven rods wide would run north and south along the quarter section lines. The "quarter line fences" have been selected, it is said, because in the Prairie States public roads usually follow section lines, and it is desirable to keep the forest strips back some distance from the road because of snow conditions in the winter. The planted strips will provide an average of fourteen acres of shelter belt forest to each square mile, and the total cost an acre, including purchase or lease of lands, preparing ground for planting, nursery stock, planting, fences, etc., is placed at thirty-nine dollars. Native trees will be used in the main—green ash, hackberry, elm, burr oak on heavy soils; yellow pine, red cedar, Black Hill spruce and cottonwood on the lighter soils. Species selected from other arid regions will be used to supplement these trees. To provide the necessary planting stock extensive seed collecting will be called for this fall, and the establishment of nurseries within and adjacent to the 100 mile strip will be necessary. Approximately thirteen nurseries are contemplated—four in North Dakota, two in South Dakota, three in Nebraska, two in Kansas, one in Oklahoma and one in Texas.

Shaded area shows proposed location of the Shelter Belt; black circles approximate location of nurseries required.

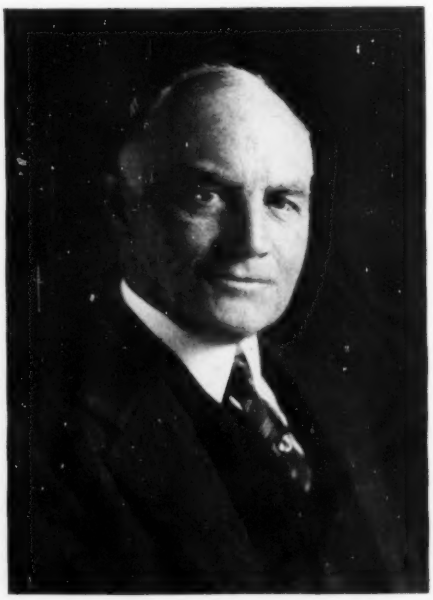
This forestry project, it is known, has long been in President Roosevelt's mind and has had his keen interest for the past year. It is the outgrowth of a plan he himself suggested in August, 1933, when he asked the Forest Service to explore the possibility of planting wind breaks 100 feet wide, five miles apart, in six parallel strips through Texas, Oklahoma, Kansas and Nebraska. Drought conditions this year apparently confirmed his belief in the soundness of a great public works undertaking designed to protect thousands of prairie farms against unfavorable climatic conditions in the Prairie States and at the same time to provide immediate employment for the drought stricken farmers.

George D. Pratt Retires As Association President

BOARD OF DIRECTORS NAMES HENRY S. GRAVES TO SERVE UNTIL HIS SUCCESSOR IS ELECTED IN DECEMBER

UPON the advice of his doctor that he take a rest from active affairs, George D. Pratt on June 12 asked to be relieved as President of The American Forestry Association, a position he has held continuously since March 1, 1924. Acceding to his wish, the Board of Directors of the Association on June 26 accepted his resignation as President and elected Henry S. Graves, Dean of the Yale Forest School and former Chief Forester of the United States, to serve out Mr. Pratt's unexpired term, which ends December 31, at which time new officers will be elected by ballot of the Association's membership. Although retiring as President, Mr. Pratt continues as a Director of the Association.

In accepting his resignation, the board of Directors paid tribute to Mr. Pratt in the following resolution:



George D. Pratt

"The directors of The American Forestry Association, having been notified that their friend, counsellor and leader, George D. Pratt, has asked to be relieved from the duties of the office of President of the Association, which he has so ably held since March 1, 1924, hereby declare: Mr. Pratt has given so generously of his time, thought and energies, as well as of his personal fortune, in promoting public interest and support for the perpetuation of American forests, the preservation of natural beauty throughout the land, the protection of wild life, and the recognition of scientific principles in the conservation of natural resources, as to place him for all time among the outstanding leaders in American conservation.

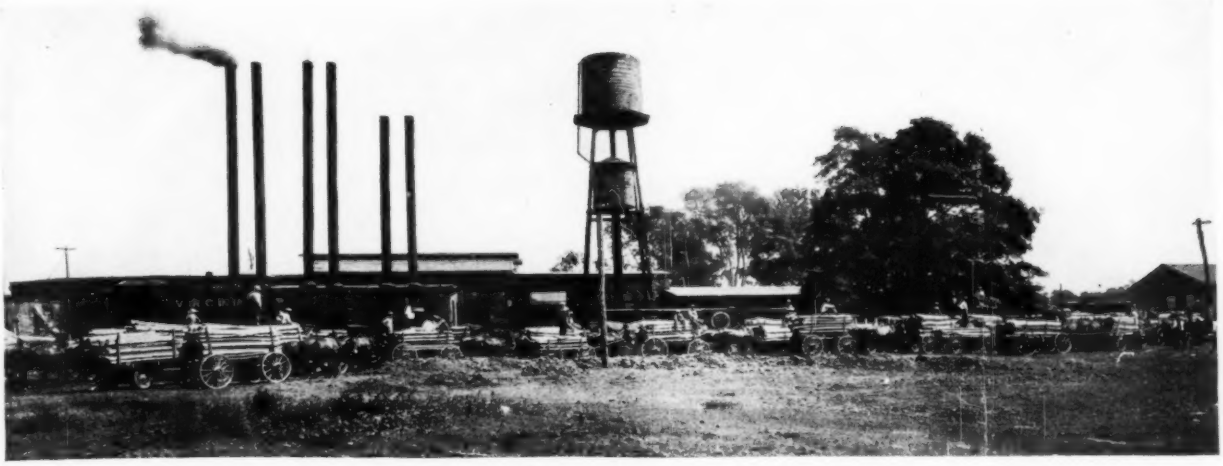
"Realizing his need for a rest from an active life devoted largely to public welfare, the Directors accept Mr. Pratt's resignation with deep regret and with a profound sense of appreciation of his devoted service and his many benefactions in the Association's field of activities, and they wish for him a speedy restoration to health. They assure him of their need for his continued advice, counsel, and friendly leadership, and they express their great pleasure that he has consented to continue with them as one of the Association's Directors."

Mr. Pratt has been actively connected with The American Forestry Association for many years. In 1922 he was elected a member of the Board of Directors and on March 1, 1924, was made President, a position to which he has been re-elected every year since by referendum vote of the Association's membership. In the long line of distinguished men who have headed the Association since its organization in 1875, Mr. Pratt's administration stands out with enduring permanency and accomplishment. Elected at a time when the Association was passing through a critical period, Mr. Pratt was instrumental in rebuilding it upon a sound foundation financially and educationally.

Notable among his early acts as President was initiation of an Association Endowment Fund to which he himself contributed $100,000. Responding to his leadership and generosity, over a thousand members of the Association joined him in the creation of an Endowment Fund that now exceeds a quarter of a million dollars and stands as a pillar of permanent strength to the Association. He insisted that the Association be operated on a business basis and that its expenditures be kept within its income. Never during his presidency has he or any one else been called upon to make up a deficit at the close of the year. Equally interested in seeing the Association's educational work soundly developed, Mr. Pratt gave of his time and means in the formulation of specific projects, including the Southern Educational Project to stop woods burning in the South and the National Nut Tree Project to stimulate the planting of native trees by the Boy Scouts. He conceived the idea of an Association medal to be awarded school children annually in the different states for outstanding work in forestry and conservation and has furnished the medals at his own expense.

Henry S. Graves

During his ten years as President of the Association Mr. Pratt never missed a meeting of the Board of Directors or an annual meeting of the Association. Although an exceedingly busy man, he was always ready to arrange his affairs to appear in behalf of the Association or in support of any forestry undertaking which it sponsored. Deeply interested in forestry, he was nevertheless a strong advocate of the Association broadening its viewpoints and activities in the whole field of conservation in which he was active as an officer of other organizations. Prior to becoming President of The American Forestry Association he was for six years Conservation Commissioner of the State of New York.



Farm wagons bring in the crop from farm woodlands to the mill.

Wood-Using Industries in Community Life

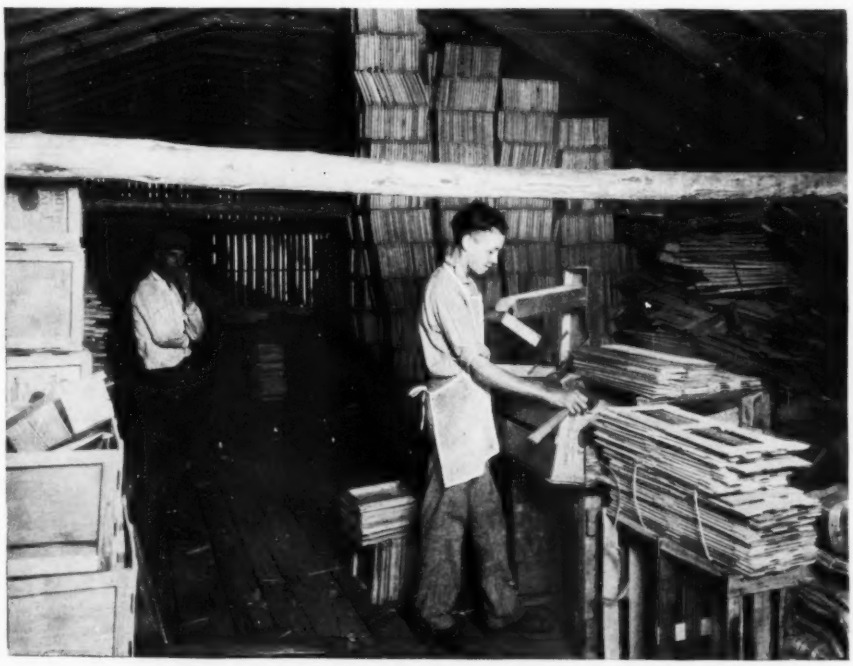
By CAROLINE B. SHERMAN

(Photographs by United States Department of Agriculture)

AMERICA is thinking actively today about the possibilities of small rural factories in the alleviation of poverty on the farm and among workers living in sordid city conditions. It is thinking about their possibilities in providing better and more wholesome ways of living for many of small incomes in the years to come.

That this thinking is not visionary is amply attested by many concrete examples and by the community-wide influences for good that many rural factories have exerted through the years.

Realizing the vital part that rural factory industries must play in many isolated areas of otherwise small income and meager possibilities, the Federal Department of Agriculture recently made a study of considerably more than a hundred rural factories, of which more than thirty were wood-using industries. These factories were scattered from Massachusetts to Georgia and as far west as Iowa. Results of this study are now available just as reconstruction plans of this new era are demanding specific knowledge of past performance and future possibilities.



A small plant in Northumberland County, Virginia, where crates are made locally for a packing house.

Besides the necessary tabulated figures of kinds, location, age, valuations, investors, regularity of employment, wages, power, markets, major and minor difficulties, and all those other elements that prospective owners must know, the study yielded much of incidental, but

warm human interest. It revealed men who have practically all their own machinery made at their factories in order to give more work to their neighbors; we find a furniture manufacturer who had been using coal for fuel, changing to wood when the depression came in order to buy from local farmers; another man who began as an independent carpenter, became a wagon repairer, and is now an auto-body builder on his own eighty-acre farm with neighbors to help him. It revealed several operators of wood-using industries who conduct demonstrations of good forestry methods and several groups of employees who are themselves owning and experimenting with woodlots. A community association, composed of the workers in one factory, has bought fifty acres of land and is reforesting; this association also manages a thirty-five-acre apple orchard owned by the factory.

In such every-day ways the forests aid the simple country folk—ways that to many mean all the difference between sunshine and shadow. These really artistic and useful things are made from pine needles and raffia by the farm women of Georgia and Alabama.

With many of the rural factories that are now functioning and will probably continue to function in increasing numbers under the encouragement and stimulation that the idea is now receiving, a close relation to the natural environment is not always possible. But the small wood-using industries are part and parcel of the earth and air and natural surroundings of the localities in which they are found; and in an encouraging number of instances they are an active force for good in the lives of their people.

Consider, for instance, a tannery down in the Tennessee watershed which has been a stabilizing influence in its neighborhood for nearly forty years. Its officials have systematically encouraged and are largely responsible for home ownership among its workers. The enterprise furnished electricity to the community for several years. The influence of the factory, both direct and through increased tax rolls, has aided the little town to have a good high school; it is credited with aiding in the development of two local churches, and was influential in the establishment of a county hospital located not far distant from the factory center.

But probably closer to the people themselves than even these coveted local improvements are the earnings that this tannery has made possible throughout this rural county. During the depression years it has proved to be an economic bulwark to the people. In one depression year alone it distributed to its employees from the village and farms more than $90,000 in wages besides the money paid for the wood and bark it uses, all of which is bought locally. More than $100,000 was paid for these two materials that same year. The hauling aided in bringing about the improvement of roads. Previously the tannery bought its hides from the local farmers but now they must be shipped in from a distance.

The majority of the workers in the tannery live in the village but some come from farms. There are more applicants from the farms than the tannery can employ and those who are on the rolls feel themselves fortunate. One farmer who walks three miles each day to the tannery says he can still do his farming and that without his factory wages he could not make a living for his family. He sees no discrimination between village and farm employees, which checks well with the officials' statement that their labor from the farms is very satisfactory. Low land values and a supply of steady, dependable labor seem so desirable to the officials of this company that they have developed two similar branch enterprises in other rural localities in the same general region.

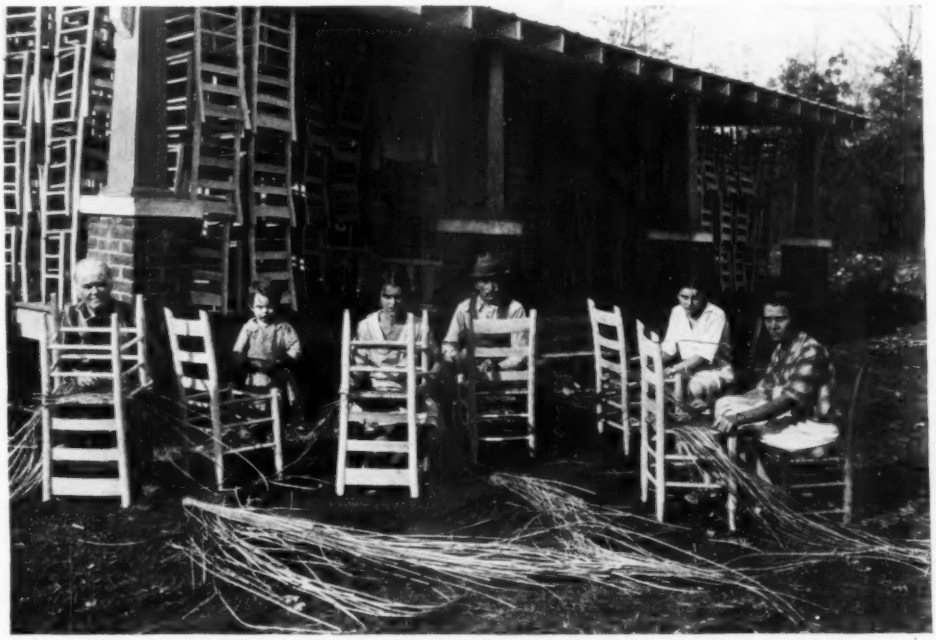
Somewhat farther north near the Blue Ridge is a chair factory that has furnished all the difference between mere

Photographs by courtesy of Ola Powell Malcolm

And these are oak splint baskets, equally beautiful and useful, made by the women of the Ozark Mountains of Arkansas.

existence and a fairly satisfactory way of living to more than a score of families for more than forty years. It was started by a group of local business men to give labor to the people in the village and on farms and thus increase buying power for trade in the village stores. But it was soon taken over by a large farmer who still directs his 140-acre farm, takes a leading part in many of the town's enterprises, and has found time to serve as mayor.

This factory, too, buys most of its materials at home, paying in a recent year of depression nearly $14,000 to local farmers for its hardwood supply. Its payrolls put approximately $5,000 into the pockets of the local people that same year. There is still a third source of local income from this enterprise, for the factory gives out chairs to be caned or bottomed in farm homes—$13,000 was paid out for such homework that year. The $32,000 distributed among families whose other income is almost negligible in years like these is fully recognized as a manifold life saver, especially as the officials of the factory try to give the caning to the most needy farm families. Even then the demand is double the quantity of work to be supplied.



Home work from a chair factory adds to the income of this farm family. All of the grown folks know how to bottom chairs.

This home work is often desperately needed. Women are using it as the chief means of support for dependents. One farm woman with an invalid husband and four children works at her chairs as steadily as she can, and earns about $350 a year. She says they could not possibly have saved their farm from foreclosure if she had not had this work. Her neighbor, who has an elderly husband and six others in her family, earns about the same amount with her caning and is anxious to have more caning to do. Another whose husband is in the penitentiary supports herself and two small children in this way. One farm family of six earns more than a hundred dollars a year just in odd hours.

In some of the "creek-bottom" settlements of Kentucky, chair-making is an inherited industry and the skill literally "runs in families" for generations. Nearly every farmer in one wooded county is at least a potential furniture maker. Much of this work is unorganized and is carried on rather picturesquely on a one- or two-family scale, but the total output is rather large and the total income does not seem small to these people. Here the process of chair-making begins in the forest several months before the chair is actually begun. Suitable trees are cut, sawed into blocks, and rolled out of the hills to the workshop or home, to be seasoned for use. The men have developed skill in wood selection; they use

(*Continuing on page* 377)

Club women use local material in making baskets from the needles of the beautiful Colorado pines, in Larimer County, Colorado.

DEEP SOUTH RAVENS

By
CHARLES NEWTON ELLIOTT

Zeb peeking into the nest, in fear and trembling lest the pole should slip.

ZEB SILVY leaned backward and placed one shoulder of his angular frame against the huge granite cliff. His bronzed face crinkled around the corners of his eyes.

"Do you know," he asked, in his easy drawl, "what bird it was that Noah let out of the ark first?"

"The dove," I replied, without hesitation.

Zeb's little mountain home, where—fourteen years before—the reward had been offered.

"Wrong," said Zeb; "it was the raven." Tom Burleigh, of the U. S. Biological Survey, standing near, grinned.

"Few people know that," he said. "And fewer people know that since Noah let out the raven, it has been the wildest, most picturesque bird in existence. Take this one, for instance, that Zeb has been looking for so long."

I nodded. I had been in Zeb Silvy's little mountain home fourteen years ago, when Tom offered him a reward for the nest of those big, black aviators.

"Zeb," he had said, "if you'll go up yonder and find the home of those birds, I'll give you five dollars. They breed furthest south of any ravens in eastern North America, and are the only ones I have ever seen in Georgia. We know they are up there, but the world doesn't. We've got to prove it with nest and eggs."

Zeb said, "I'll find 'em."

That had been fourteen years ago. And now we stood under the nest which contained five eggs, and which had been found at the conclusion of a search which had begun almost one and a half decades ago. Several times during late winter, Zeb had located the nest when it held young birds, never when it contained eggs.

From where we stood, we could see the parent birds circling, just beyond the fringe of trees on the mountain side. From time to time one of them would set its wings and plunge downward like a huge black arrow in flight. The other bird would swing into the strata of air and climb upward, watching us. They both continued to utter wild, hoarse croaks.

"They are the most versatile birds I know," said Tom. "They are capable of performing any number of tricks in the air. I have even seen them tumble, like tumbler pigeons. And their vocabulary is much more extensive than that of a crow. They have any number of notes which mean different things."

We turned our attention to the nest. Its position was most unique. It had been built on a tiny ledge, under the overhanging face of a gigantic cliff. Just where the inside slant of the huge slab of rock came to a stop and sheered off perpendicular to the ground, was a seam. And welded into this seam was a tiny ledge that began and ended on the face of the cliff. The ledge was less than a foot wide and not more than ten feet

long. It was twenty feet above the base of the cliff, and not connected in any way to the mountain side. Thirty feet from it, on another cliff, was a miniature glacier and a wide array of icicles. The surrounding trees were bare. Winter had not loosed its grip on the mountain world.

"How will we get the nest?" asked Doctor Phinizy, also a member of the party. "It's quite too high to reach."

"When a man becomes an oologist," replied Tom, "he learns all sorts of tricks. I'll show you."

Seizing the ax Zeb had brought along, he swung it to his shoulder and set off around the base of the cliff towering above us. In a few minutes he returned, dragging a small tree. The limbs had been chopped off several inches from the main stem, affording a picturesque, but very accommodating, ladder. This was pushed against the ledge. One by one, we climbed it to have a peek at the embryo ravens. Zeb, mountaineer-a-la-natural, who had spent his life scaling the sides of colossal peaks and shinnying up and down rocky inclines of magnificent proportions, was hesitant to climb the twenty foot tree trunk.

"It might fall," he said, "and hurt me. I ain't used to such high things."

I snapped a number of pictures above and below the nest to show its location and arrangement. Then Tom climbed the improvised ladder and brought it down.

Doctor Phinizy reaches the goal —the top of the ladder and the nest!—though he *seems* more interested in the camera.

"Won't it break up their brood for this season?" I asked.

"Most assuredly not," he replied. "Many times the nest is robbed by cats or other animals, and they always try again, just like all other birds do. In less than ten days another brood will be on the way."

We examined the nest thoroughly. it was simple in constructoin, being made of sticks—large sticks on the outside, graduating to twigs toward the center. The lining was of shredded bark, interwoven with hog hair. We estimated that the particular cliff on which it was placed was some 4,200 feet in altitude. It was just under the top of one of the smaller peaks on the range leading away from Enotah Bald, Georgia's highest mountain.

Earlier in the morning, while we shivered outside Zeb's door, he had remarked, "It's getting warmer. Looks like rain." All during the day, the thermometer had dropped with amazing rapidity, and by the time Tom had collected the eggs, wrapped them in cotton and stored them in a binocular case, and had rescued the nest from its perilous perch on the ledge, Zeb had changed his prophecy to one of snow. Until our task was finished, we did not realize how cold we were.

So while Tom concealed himself in a clump of bushes to await the return of the birds and make some notes on their actions, we crept around the mountain-side to locate a spring by which to eat our lunch and incidentally build a fire. We found an ice-cold flow of water which bubbled out from under the mountain. Tom was not long in joining us.

"Those birds," he stated, "would have found me frozen and had their revenge if I had stayed there much longer."

He glanced at Zeb.

"If it rains in this weather," he commented, "it'll come down in chunks."

Tom collects the evidence—the nest of the southern ravens, built on a tiny ledge, under the overhanging face of a gigantic cliff.

While we ate, Tom told us the story of the ravens. He had hunted and studied them in his home state, Pennsylvania, had found them on Wayah Bald, just acros the line in North Carolina. He had seen them in the Great Smoky Mountains. I had seen this very pair, apparently wandering up and down the Georgia Blue Ridge Mountains during the summer months, playing away the days until time should come again when they would return to the shadow of Enotah and raise their brood of young.

The raven is one of the most romantic of all birds. He is a link between an advancing civilization and a retreating wilderness. He makes his home high among the mountain crags and tops. When man moves in, he moves out to seek the solitudes of the wilderness beyond, the winds and the skies.

Within the memory of the oldest inhabitants, these two birds have bred under the (*Continuing on page* 384)

The transplanted golden trout thrives at timberline and above, and has for years perfectly adapted himself in these little lakes of the upper Kern River basin.

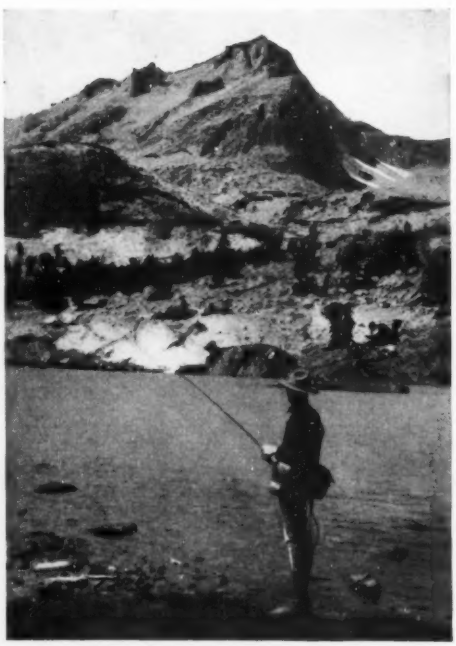
THE ROMANCE OF THE GOLDEN TROUT

How the Most Beautiful of All Our Game Fishes Was Discovered, Propagated and Distributed Throughout High Sierra Waters

By CLAUDE M. KREIDER

IF YOU have never paused, wide-eyed and breathless, to admire a golden trout, freshly caught from crystal clear Sierra waters, you can never grasp in full the unbelievable beauty of this gorgeous fish. Description is futile, but perhaps will explain the intense interest of fishermen, ichthyologists and nature lovers when first vague rumors began to reach the outside world thirty years ago of this "golden fish" found in one small stream flowing down the west flank of Mt. Whitney, in the high Sierra.

And you must not confuse the fish with the goldfish of the aquarium, which is drab and ungraceful by comparison. Imagine the graceful outline of a rainbow trout, with a back of bright olive green, marked with small jet black spots. Along the meridian line is a wide band mottled in copper, crimson and violet. The fin and gill covers are bright orange, traced with ivory white. And the whole lower part of the fish is the bright, rich gold of a newly minted coin, with the soft sheen of the very finest silk.



Unnamed and little known lakes are a constant lure to the fisherman in the Sierras for in their depths is to be found unminted gold, in the "goldens."

Facts, of course, were meager, in regard to this strange trout, for little Volcano Creek, now more appropriately named Golden Trout Creek, was far back in the range and accessible only by a long pack trip. But it was learned that this placid little brook, which flows for miles through green mountain meadows of 8,000 to 9-000-foot elevation, was literally filled with goldens, the largest of them about eleven inches in length. The color was—and still is—a matter of pure theory, perhaps a tenable one being that native rainbow trout in the stream throughout the centuries gradually became golden from exposure to the bright sun, while lying in the shallow riffles over the bars of yellow gravel. However, a new member of the famous Salmo family was given to the world, and with him conjecture grew.

At first it was believed the golden would not grow larger than the specimens taken in their native creek. Then a pioneering and adventurous fisherman cast his flies over lakes of the Cottonwood chain, at 10,600 feet, on the

eastern slope of the range and took gorgeous, true-colored goldens to a weight of three and four pounds. This was news, especially for the "dyed in the wool" trout enthusiasts, and they then learned that one of the cattlemen, who each summer lived in the high meadows, had carried a few live specimens across the pass in a bucket, and "planted" them in the creek which drains the lakes. And these transplanted fish retained all their gorgeous coloring in the new waters. Thus were exploded two pet theories—that these trout would not grow large or retain their color in other waters.

The State Fish and Game Commission, about 1906, sent in a deputy who took several hundred of the little fellows from Golden Trout Creek on a fly, and packed them in cans on mules to barren streams and lakes far up in the Kern River Basin, where natural obstacles, such as waterfalls, would prevent their mixing and hybridizing with the native rainbows of the region. And these pioneer "plants" proved more than successful, as any fisherman can testify who has fished through a summer vacation among the scores of deep, alpine lakes in the great, peak-enclosed basins whose snow waters feed the mighty Kern River. As late as the year 1922 I found, to my utter astonishment, brilliant, gamey goldens, up to a weight of two pounds, in tiny alpine tarns which we had naturally supposed barren of fish. Thus, through a period of fifteen years they had multiplied and colonized every lakelet and brook in that drainage system they could reach, and their existence there was practically unknown.

But always the popular and fallacious belief was held that the golden would lose his striking color if taken from his own little stream, except among those of us who annually searched for him in his new habitat. Happily all these initial efforts were in waters of high altitude, where natural conditions similar to those in the parent stream obtained, so there was no logical reason for any change in the beautiful fish himself.

Most remarkable is the ability of the golden to multiply and grow fat in the ex- (*Continuing on page* 378)

Photograph by Allie Robinson

Packing in cans, filled with the little goldens, to restock barren streams and lakes—alpine waters in the great, peak-enclosed basins, whose snow waters feed the mighty Kern River.

Photograph by R. C. Lewis

Here where the Alpine forest meets the sheer granite of the upper basins, the gamey golden has demonstrated his ability to multiply and wax fat. He but waits your fly to flash, like a leaping flame, to the lure.

Photograph by C. Frank Brockman

A Deep Woods Trail"

MADE ON THE INDIAN HENRY TRAIL, IN MOUNT RAINIER NATIONAL PARK, IN WASHINGTON

Honorable Mention—National Competition Conducted by
The American Forestry Association
for
Beautiful Photographs of Trees in America

EDITORIAL

The Taylor Grazing Act

BY far the most important legislation in the conservation field enacted by the Seventy-third Congress is the Taylor Grazing Act to protect and regulate the use of the public lands of the United States. How important and far-reaching the law is time only can tell. Doubt has been cast upon its real import by a sharp division of opinion between lawyers of the Departments of Agriculture and Interior. The former recommended against its approval by the President on the grounds that certain amendments added in the Senate short-circuit its conservation current by relinquishing federal control over the lands to the states, by hardening past use of the public ranges into permanent property rights and by opening the door to an accelerated disposal of the lands to private interests.

Attorneys for the Department of the Interior, however, could not read these sinister meanings into the language of the bill. They held that it provides ample authority for federal control and regulation of grazing on the public lands and for carrying out the Administration's policy of natural resource conservation. To bridge the gulf in departmental interpretation, the bill was referred to the Attorney General and, assured by his opinion that legally it is adequate in empowering the Secretary of the Interior to carry out its conservation objectives, President Roosevelt signed it on June 28.

In view of the difference of opinion between the solicitors of the two Departments, the Attorney General's opinion that the Act adequately protects public interests and gives the Secretary all needed authority is reassuring and must be accepted, at least until the courts rule otherwise. It is not improbable that some of the ambiguous and seemingly contradictory provisions of the law will precipitate early court action and that eventually the Supreme Court will be called upon for final interpretation. It will be recalled that grazing on the National Forests was firmly and clearly established only after the Supreme Court passed upon the initial law authorizing the Secretary of Agriculture to make rules controlling grazing. The possibility that the new grazing Act may be susceptible to different interpretation by the courts should not be dismissed. If, for example, the courts should hold that it does in fact create permanent property rights for those who have used the public lands for grazing in the past, administrative efforts will prove largely futile. Furthermore, once these rights are granted it would be difficult indeed to dispossess the grantees of them. For these reasons the disputed meanings of the Act call for close watching in its application, and early determination by the courts so that they may be rectified as quickly as possible.

The Act is the first fulfillment of more than thirty years of effort on the part of conservationists to stop the destruction of 180 million acres of public lands by over-grazing, erosion, and general lack of conservation stewardship. Had the measure been passed by Congress as it was originally introduced by Representative Taylor of Colorado, it would have been a clean-cut victory. Without ambiguity of language and without limitation of area, it would have given the Secretary of Interior broad authority to regulate the use of the entire Public Domain, to stop injury to the land and to restore its productivity. Senate amendments, in addition to clouding the meaning of several sections, however, now limit the Secretary's authority to not over eighty million acres, leaving approximately 100 million acres subject to continued misuse and destruction. Other amendments limit the authority of the President to adjust grazing and forest areas as between the Public Domain and the National Forest, thus blocking a sensible and logical allocation of certain lands to the administration to which they are best adapted.

Conservation of the Public Domain by regulated use has been one of the most highly controversial and long drawn out issues in public land history. It is perhaps expecting too much to achieve a perfect and complete law in one and the first making. Virtually all important conservation policies today have been evolved from small and incomplete beginnings. The real victories have been the initial statutes giving birth to broad policies and providing the substance for later perfection as experience and needs dictate. So it must be with the grazing act. Some of its provisions obviously are not entirely clear. Its whole is not as complete as it should be. But assured by the Attorney General that its legal form is adequate, it stands as the first and substantial step toward conservation and regulated use of resources of vast moment to the nation. Its administration by Secretary Ickes must have the wholehearted support of conservationists to the end that the eighty million acres to which it applies may be brought under control as promptly as possible and to the further end that the Act may be broadened and strengthened as administrative experience dictates.

WILDERNESS JITTERS

By
PAUL HOSMER

THE front door of my little logging camp office flew open and Eddie Kerrigan fell in.

"Hello, old top," he greeted cheerfully. "Heard you were hiking over the McKenzie Pass tomorrow so I thought I'll go along. I got three days—"

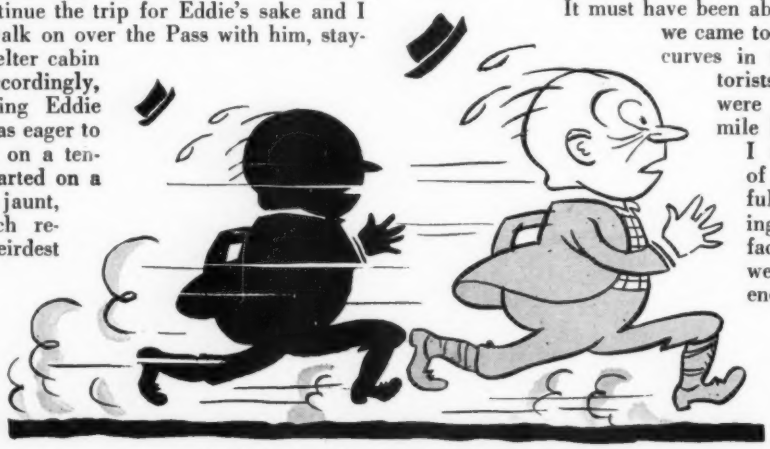
"That's a trick door," I said. "It closes itself when you go out."

But cheerless receptions were nothing in the unregenerate life of Eddie Kerrigan. He remained undismayed. He had heard that I was to take a two-day hike over a little used trail to look at some timber the company was thinking of acquiring. And as I was going alone I was really glad of his company. But it was just as well not to let Eddie know it. He was an athletic sort of person, as awkward as a bull moose with front and rear antlers, and was probably responsible for more business inefficiency than any other agency except laudanum. I had to confess, however, that he was a lot of fun and good company in the woods. While I tried, therefore, to act as bored as Lindbergh riding a bicycle, the conference wound up with the details all settled in his favor.

Strictly speaking, I was not planning on hiking over the McKenzie Pass on this trip. The McKenzie is one of the world's most scenic highways, a fine gravelled auto road over the Cascades between the little town of Sisters on the east and Eugene on the west. It merely happened that the trail I proposed to follow ended on the McKenzie Pass and I had planned to have one of the crew meet me there with a car to bring me home. However, there was no reason why I should not continue the trip for Eddie's sake and I finally consented to walk on over the Pass with him, staying one night in a shelter cabin on the summit. Accordingly, early the next morning Eddie made his appearance, as eager to be off as the buttons on a ten-dollar suit, and we started on a simple, harmless little jaunt, the memory of which remains as one of the weirdest and most nerve wracking experiences I have ever been through. I located the trail a mile from where we left the car and all morning we strolled through a virgin pine forest, sizing up the timber and occasionally climbing a butte to get an idea where a logging railroad might be put through. At noon we camped on a cold stream where we cooked our dinner, and that afternoon about three o'clock we came down out of the lava beds and struck the easy grade of the McKenzie Pass highway. We had climbed to 5,000 feet above sea level when much to our surprise a storm came down upon us. At four it began to drizzle and we plugged along side by side soaking up water like a couple of sponges. As our over-night shelter cabin was still three miles away there was nothing to do but keep going, so we continued up the hill, telling each other how comfortable we were going to be that night after we got dried out. Beyond one soggy Indian family coming down the hill in a buckboard we met nobody on the road.

The rain began to come down harder and an eerie sort of darkness descended. Having spent most of my life in lonesome sections of country I felt no disturbing influences beyond the fact that I was getting pretty wet, but Eddie began to cast worried glances behind him and into the dense fir thickets. He was immediately reminded of several weird and somewhat gruesome stories he had read of early settlers who had climbed the McKenzie when it was nothing more than an old Indian trail, and he regaled me with accounts of strange beasts which travelers had reported on these high and barren wastes. I'm not particularly imaginative myself, but there was something about the strange lonesomeness of the place that began to get under my skin, and Eddie was no great help in dispelling it.

It must have been about five o'clock when we came to one of those hair-pin curves in the road which motorists love so well. We were considerably over a mile high at the time and I don't suppose either of us was a very cheerful sight in our streaming clothes and wet faces. But our spirits were still buoyant enough. Fog, mist and rain obscured an otherwise wonderful view of the McKenzie watershed. All we could see was the turn ahead. We trudged



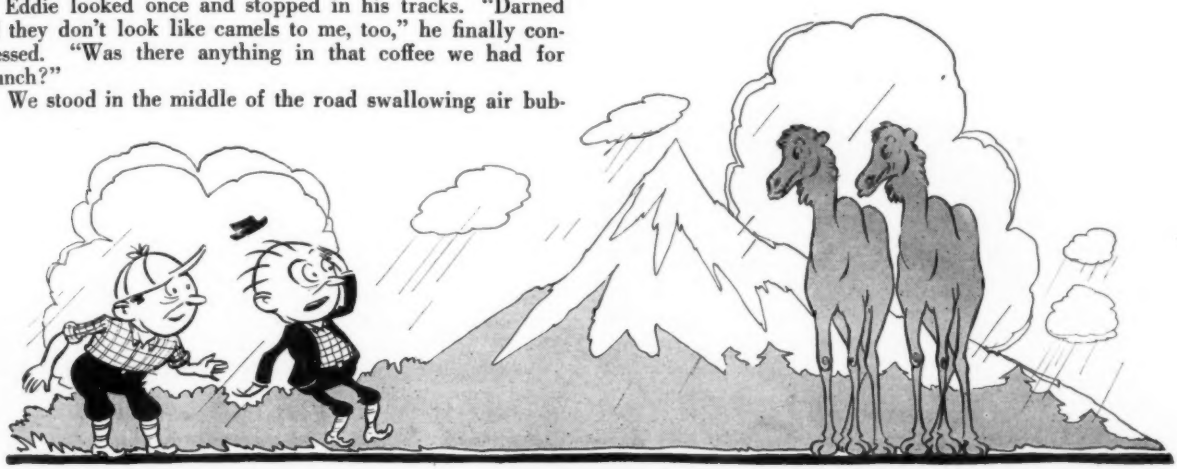
"A black thing drew up behind me . . ."

on, dripping water from every pocket and hoping we would reach the cabin before we sank.

I couldn't be sure, but about three hundred feet from the turn I glanced ahead and imagined I saw a peculiar shape framed against the misty haze of the sky. I paid it no particular attention thinking it was merely rain in my eyes, but soon I looked up again and this time there seemed to be two such forms. I blinked rapidly once or twice and nearly fell in on myself. I shook my head, but nothing happened. The darned things were still there. They looked for all the world like a couple of camels standing out in the rain on the edge of the mountain. It was preposterous, of course, but that's what they looked like and for a moment I had a queer sensation, as if a flock of quail had suddenly flown out of my shirt collar. I called Eddie's attention to the mirage.

Eddie looked once and stopped in his tracks. "Darned if they don't look like camels to me, too," he finally confessed. "Was there anything in that coffee we had for lunch?"

We stood in the middle of the road swallowing air bubbles, our eyes glued on the remarkable apparitions. Neither of the shapes moved, but my heart, for some reason, began sloshing up and down in my esophagus like the plunger in a bicycle pump.



"I imagined I saw a peculiar shape framed against the misty haze . . ."

"There's no animal in these parts that looks like that," I said. "Maybe it's the altitude."

"What you talking about?" scoffed Eddie, who is as set in his ways as a gate post. "I've been up 11,000 feet and I never saw anything like that. I've been over this road a dozen times and the biggest wild animal I ever saw was a coyote."

"You're absolutely right," I agreed. "But the fact remains that if those aren't camels, I'm the sixteenth wife of the Sultan of Turkey."

The closer we approached the two statues the more they took on the appearance of camels. We knew there wouldn't be any wild life this high up and anyway, Oregon had no animals that looked like camels. I tried to snap myself back to reality. Just two miles east of here I had killed a bear the year before, a common enough occurrence. On a previous trip I had stumbled over an abandoned coyote trap with patches of fur sticking to the rusty steel jaws. On winter trips into this wild lonely wasteland I had observed the tracks of the existing wild life and never had I seen signs of anything larger than a bear. But argue as I would, there was nothing to explain away the fact that directly in front of me stood two towering shapes that bore every indication of being camels. Something, evidently, was haywire and I was beginning to act as nervous as a strange dinner guest trying to extract a raspberry seed from under his upper plate. We paused for a conference and decided to investigate. We were unarmed and too tired to run. But something had to be done, so we advanced another hundred feet to reconnoiter. As we did so one of the shapes moved. In fact, it stretched out a camel's neck and peered at us out of what were distinctly's camel's eyes. A camel's lower lip even flopped dismally in the rain and bounced back into place again.

Ordinarily Eddie is harder to rattle than an eider-down quilt, but I noticed that he was beginning to breathe like a donkey engine snaking a nine-foot butt log up the side of a canyon.

"Hoof!" he gasped. "I've felt this coming on for some time. Yesterday I had little black spots in front of my eyes. It's my heart. I've suspected it for months."

"Of course," I reasoned, "there might be a chance in a million that these are camels. Seems to me I recall somebody importing some ships of the desert into Nevada once. Maybe these are descendants—"

"No," replied Eddie firmly, "it's my heart. This thin air and over-exertion has finally got me." He paused and took a deep breath. "I'll tell you what I'm going to do. The way I feel, I'll probably give out before I reach the cabin anyway and if it's coming I might as well get it over with. I'm going to walk straight past those things just as if everything was all right. If it's just a figment of the imagination I may pull through, but if they are really camels I want you to give this watch to my sister in Bemidji and tell her—"

I made a noise that sounded like the exhaust of a bathtub. "I'm no healthier than you are. I won't be there to give it to her."

I regarded the idea of deliberately crowding past those two outlandish figures in the roadway with about the same enthusiasm as a vegetarian finding a caterpillar in his salad, but there seemed nothing else to do. Resolutely we adjusted our packs and prepared to hike up the hill as if nothing was the matter. Side by side we assumed the position of soldiers and started. We kept a little to the inside of the road in case it seemed necessary to take to the woods. Time dragged slower than a polecat walking through a parlor as we approached the two unearthly forms and I was rapidly beginning to understand the feelings of the mule in the paper snowstorm that laid down and froze to death just thinking about it. But I managed to keep my eyes steadfastly to the front. And (*Continuing on page* 381)

HOW FARM WOODS CUT FARM COSTS

By ROY C. BRUNDAGE

A tool of a generation ago used with advantage today—A. B. Redmond, of Tippecanoe County in Indiana, splitting out oak fence palings with a frow.

THE farm woods has often been likened to a savings acount and the present economic situation has brought out this comparison more clearly than ever. A savings account keeps on drawing interest from year to year and a woods keeps on growing and adding more volume if it is given a chance. The woods can be drawn on to supply an income from saleable products, and equally as important perhaps, it will furnish the many wood products needed on every farm as lumber, posts, stakes, staves, poles, and firewood. It is said by many leaders in agriculture today that the farm must become a greater self-supporting unit if the farmer is to cut down his costs of operation and thereby increase his net income.

A good example of the way one may draw upon the woodlot for needed improvements on the farm is shown in the following cases. The first case also illustrates how a tool of a generation ago can be used to an advantage even today. Mr. A. B. Redmond, a progressive farmer in Tippecanoe County, Indiana, needed new fences for his barn and hog-yards. Going to his twenty-five acre woods he cut some red and white oak trees and had some of the logs from these sawed into lumber, at a custom sawmill on a neighbor's farm. This supplied the cross-boards to which the palings were nailed. The palings were split from oak billets with a frow in the manner shown in the picture and were made in three and four foot lengths. The longer lengths were used in the barn-yard fence and made a substantial fence for all kinds of stock. The shorter lengths were used for the hog-yard fences where it was not necessary to keep out other stock.

Mr. Redmond is experienced in the use of the frow and can split out 1,100 to 1,200 palings a day, which is sufficient to make forty rods of fence. When the accompanying pictures were taken he had just finished building eighty rods of fence. Round locust posts were used which had been cut on the farm, and these added materially to the durability of the fences. Mr. Redmond believes that this fence will last at least fifteen years. His assumption was based on the fact that twenty-two years ago he assisted his father build a similar fence and it is still in service.

The actual cash outlay of the fences was the money spent for the saw bill, nails and the hired man's wages. This amounted to approximately twenty dollars. Incidentally, Mr. Redmond was helping the unemployment situation, for he had hired a man through the winter at a nominal wage though he did not need extra labor for his regular work. However, as the hired man's time was profitably employed in improvement work, Mr. Redmond was well repaid for his labor cost, for an estimate showed that the materials would have cost $100 or more if purchased at retail prices.

A good woods on the farm is to a certain degree a fire insurance policy on the barn and other similar buildings.

Needing new fences for his barn and hog-yards, he went to his twenty-five-acre woods for the material. This shows one side of the finished fence—neat in appearance, inexpensive and durable.

A smaller, but sturdy and efficient fence, was constructed of palings three feet high for the Redmond hog-yard.

these farms more self-supporting. If the woods is given care and protection and weeded properly of cull and defective trees so that a stand of tall, straight trees remains, the farmer has building material at hand either for replacements or for new improvements in the form of barns, corn-cribs, hog houses, implement sheds, and fences.

Added to the saving on cost improvements, is the advantage a farmer gains in increasing the quality of his woods. Very often he can cut second grade timber to meet his needs and leave the straight clear-boled trees to grow to a size suitable for first class sawlogs and veneer logs. By this practice the farmer assures himself materials needed for farm improvements and at the same time increases his prospective income from the sale of quality trees. Look upon your woods either as a bank account or an insurance policy, keep it growing good timber and you will find it a good investment.

In 1929 two barns were set on fire by lightning during an electric storm in Huntington County, Indiana, one of which was on Mr. Roy Whitmore's farm. His woods, containing some good oak, hickory, elm and maple timber, was located directly behind the site where the new barn was built. Mr. Whitmore contracted with a local sawmill owner to set up a portable mill in his woods and saw the lumber, plates, sills and other timbers needed for the barn and crib. By having his own timber on his farm, he saved from one-half to two-thirds of the cost of retail lumber.

The other barn burned was located on a neighbor's farm, who did not have a woods from which to secure material for a new structure. This, of course, required an expenditure for materials at retail prices. Although the two barns were similar in design and in size—forty feet long by thirty-two feet wide by thirty-four feet high—Mr. Whitmore's barn cost $1,100 or approximately $400 less than that of his neighbor.

The cost of his lumber and timbers averaged fifteen dollars a thousand board feet, including the cost of cutting the trees and sawing the logs. The value of these materials at retail prices would range from thirty to forty-five dollars a thousand board feet. The difference saved by having a good woods paid the costs of carpenter labor and the hardware required.

Both Mr. Redmond and Mr. Whitmore have found that their farm woods helped save expenditures for improvements and have added materially in making

The importance of the woodlot in farm economy is demonstrated by Roy Whitmore's barn in Huntington County, which was burned. He was able to replace it with the barn in this picture from his woods seen in the background.

PLAN TO ATTEND YOUR ANNUAL MEETING

There is no more interesting project in the country today than that in the Tennessee Valley. It is a social and land reclamation project without parallel in America.

To give its members an opportunity to see at first hand what is being done, particularly in forest and land development, The American Forestry Association is holding its Annual Meeting in the Tennessee Valley on October 18, 19 and 20. Headquarters will be at the Andrew Johnson Hotel, at Knoxville.

The three days will be devoted to field trips—inspecting actual reconstruction work, Norris Dam and Reservoir, the erosion control projects of the Civilian Conservation Corps, the Smoky Mountain National Park, and many other features of the great project.

Plan now to attend. October is the finest time of the year in the Tennessee Mountains. Days are delightful and the mountains are aflame with autumnal colors. Write for further information, particularly the special hotel rates for members and their friends. The time is October 18, 19 and 20. Reserve these dates now!

Field and Forest for Boys and Girls

By John Harvey Furbay

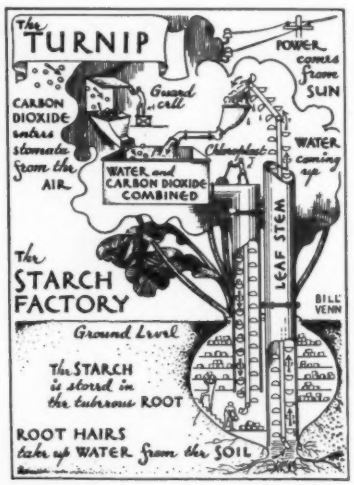
Illustrated by William D. Vennard

NATURE'S GREATEST INDUSTRY AND HER MUSIC FESTIVAL

NATURE'S greatest industry operates chiefly in the summer. It is so important that if it were to stop, every living thing on earth would starve to death. This industry is carried on in every green leaf, and is the only source of food known.

Plants are the only living things that are able to produce food. All animals, including man, are dependent on plants for their subsistence. If man eats meat, he is eating food which was produced by an animal which in turn eats plants.

This great industry of food-making is called photosynthesis. It is so-named because sunlight is necessary, and because the process consists of putting simple elements together into compounds called foods. The vastness of this manufacturing process is apparent when it is considered that every green leaf is engaged in it.



Let us look into one of these plant-factories. If we were small enough to walk inside of a green plant, we would certainly believe that it is a veritable factory, teeming with activity. Like a modern skyscraper building, a plant appears quiet from the outside, but is filled with rushing activity within.

This plant-factory is made up of thousands of rooms (called cells), and, like the skyscraper, there are elevators carrying vast quantities of material up and down past the various rooms. Raw materials are going up to the rooms, and completed food materials are coming down for storage in the basement or in special storage rooms.

Let us first visit the roots. Here we see great columns of water being drawn through tiny openings. It is taken from the soil outside. This water is rushed up the elevators (water tubes) through the stems and on out to the leaves. Here it is combined with a very simple substance called carbon dioxide, and thus it is turned into sugar. If the water supply from the roots is stopped, the whole factory is thrown out of business.

Now, let us take an elevator up to the leaves. As we enter one of the many rooms there, we become aware that we are surrounded by something green. It is not the walls. It is a great number of plant-workmen called "chloroplasts" whose duty it is to change the raw products into sugar. These chloroplasts are the substances which make leaves green, and it is only green leaves that can manufacture food. The energy which is needed for the chloroplasts to work, is derived from the sun. When nightfall comes, the entire process stops, for the power has been turned off.

In order to carry on the work, carbon dioxide must be constantly brought into the cell. This substance is abundant in the air around the plant, so all that is necessary is to have several windows which can be opened to let the air into the plant rooms. Many of these windows are found on the lower side of green leaves, and they are called "stomata." Guards constantly watch these openings, and quickly close them if poisonous air comes in. Inside the plant, this air is united with the water from the roots to produce the simplest of all foods—sugar.

This sugar is now hurried down the elevators to storage rooms where it is often changed into a similar substance called starch, which is easier to store. The only difference between sugar and starch is a molecule of water. It may also be changed into fat, which is made from sugar by taking away some oxygen molecules. If the roots have been able to supply nitrogen dissolved in the water taken in, the sugar may be united with this, and a protein be produced for storage.

The place of storage is different in various plants. Beets, carrots, and potatoes store in their roots. Cabbage and lettuce use their food to build more leaves, while fruit trees and cereals store their manufactured food materials around their seeds. It is this sugar which makes a peach sweet, and it is this same sugar changed into starch which makes potatoes and wheat such solid foods.

Green pigments are sometimes found in other parts of a plant besides the leaves, and wherever they are found, there this food-making industry is going on. In grasses, the stems are also green. Asparagus and cactus have no true leaves, and the green material is found in the stems.

It is a mistake to speak of a plant's getting food from the soil. This is never true, except with mushrooms and other fungus plants which are not green and cannot manufacture food for themselves. Plants usually get only water and dissolved minerals (salts) from the soil. The only food in plants is that which they themselves have manufactured from these raw materials taken in from the roots and leaves.

If plants are to make food, they must have this green substance and sunlight. These two factors are absolutely essential. Then, of course, they must have plenty of the raw products, namely: water and air. From

these, all of the foods used by plants, animals, and man are produced. It is the most gigantic industry in all the world, and every living thing is dependent upon it. It has never been duplicated by man, yet it is done easily and quietly in every green plant about us. It is Nature's plan for feeding her children.

August is a month of completion in many ways. The summer's work is drawing to a close. Trees have manufactured and stored their food for the winter. Families are grown and homes are dissolved. Birds are moulting and have become silent—with the exception of orioles, vireos, and a few others. By the end of the month, groups of birds are starting to move southward, and you may see some strange birds at this time. You may also see goldfinches just starting their nests of thistle-down at this late hour.

You may find grasshoppers with their abdomens pushed into the ground. They are females laying their eggs. Some of the eggs may hatch this fall, but most of them will remain over winter and supply a new "crop" for next summer. Grasshoppers and tree-crickets may also be heard in "community sings" during this month. Meanwhile, the swarming of ant colonies may take place, and thousands of winged males and females may appear in the air some afternoon for a few hours, then disappear after this short wedding-flight, to start new colonies in some crevice.

If you look at the base of the leaves on a tree, you will now find the buds which will become new leaves next spring. Some of this year's leaves may be falling already, while the beautiful color changes are taking place in those that remain. In the fields, golden-rod, chickory, and Queen-Anne's lace (wild carrot) are as delightful to the eye as were the early spring flowers months ago, and sunflowers, black-eyed Susans, and reddish blazing-stars add their blending colors to the scene.

In this mechanical age, the clatter of machinery, the blowing of horns and sirens, the whistling of locomotives, and the roar of airplane motors, all claim the attention of our senses to such an extent that we are hardly conscious that Nature is providing an exquisite musical festival all about us.

It is often necessary to get out of the cities and shops in order to hear this music, and those who have penetrated deepest into the solitudes of Nature have found it in its purest form. The writer of the twenty-third Psalm, in mentioning the goodness of God, said, "He maketh me to lie down in green pastures; He restoreth my soul—." What a picture of rest and contentment, away (*Continuing on page* 380)

FAMOUS TREES EVERY BOY AND GIRL SHOULD KNOW

No. 16 - - -THE "KIT CARSON PINE" IN THE SIERRAS

ANOTHER FAMOUS AMERICAN TREE, IS THE KIT CARSON PINE, WHICH STOOD AT THE SUMMIT OF CARSON PASS OVER THE SIERRA NEVADA MOUNTAINS. THE ILLUSTRATION ABOVE SHOWS THE LOCATION OF THE GREAT TREE AND ALSO REPRESENTS THE CAMP OF JOHN FREMONT AND FOUR OF HIS MEN WHO WERE COMPELLED TO SPEND THE NIGHT OF FEBRUARY 14, 1844 HERE WITHOUT TENT OR FOOD

KIT CARSON, FAMOUS SCOUT AND INDIAN HUNTER, WAS THEN GUIDE FOR CAPTAIN FREMONT WHO WAS ENGAGED IN THE DESPERATE ENDEAVOR OF CROSSING THE SIERRA NEVADA MOUNTAINS IN THE DEAD OF WINTER.

THE EXPEDITION REACHED THE SUMMIT OF THE PASS ON FEBRUARY 20, 1844, AND ON THAT DATE KIT CARSON INSCRIBED HIS NAME ON THE FAMOUS PINE. YEARS LATER THE TREE WAS CUT DOWN AND THE SECTION BEARING HIS NAME WAS SENT TO SUTTER'S FORT

A PLAQUE WITH A REPLICA OF THE SIGNATURE AND THE FOLLOWING INSCRIPTION NOW STANDS ON THE SITE—"ON THIS SPOT, WHICH MARKS THE SUMMIT OF THE KIT CARSON PASS, STOOD WHAT WAS KNOWN AS THE KIT CARSON TREE ON WHICH THE FAMOUS SCOUT KIT CARSON INSCRIBED HIS NAME IN 1844 WHEN HE GUIDED THE THEN CAPTAIN JOHN C. FREMONT, HEAD OF A GOVERNMENT EXPLORING EXPEDITION, OVER THE SIERRA NEVADA MOUNTAINS. ABOVE IS A REPLICA OF THE ORIGINAL INSCRIPTION CUT FROM THE TREE IN 1888 AND NOW IN SUTTER'S FORT, SACRAMENTO

WHITE PINE

Pinus strobus Linnaeus

Photo by T. F. Kouba

Typical straight trunk of a forest-grown white pine whose whorls of horizontal branches form a narrow irregular crown.

WHITE pine, long known as monarch of the eastern forests, flourishes from Newfoundland to Lake Winnipeg in Manitoba, southward through eastern Minnesota, to southeastern Iowa, and east through Wisconsin, Michigan, New York, New England and Pennsylvania, and along the Allegheny Mountains to northern Georgia. European foresters recognize it as Weymouth pine for Lord Weymouth, who planted it more than two hundred years ago on his English estate.

The sturdy, gradually tapering trunk and the horizontal limbs of the blue-green crown of white pine are a characteristic feature of many northern forests, where trees with trunks six feet in diameter and crowns reaching to a height of 250 feet were reported by the early lumbermen. Next to the sugar pine of California, northern white pine is the largest pine growing in the United States.

The blue-green needles, three to five inches long, are always borne in bunches of five, and remain on the tree from three to five years. A loose papery brown sheath surrounds their base during the spring and early summer. In May and June yellow staminate cone-like blossoms appear on the new shoots of the lower branches and produce quantities of pollen, which is borne great distances by the wind. At the same time, small bright pink cone-bearing pistillate flowers with purple scale margins occur on the end of the upper young shoots. The staminate blossoms wither and fall soon after they have lost their pollen, but by the end of the first season's growth the tiny upright, green cones are about an inch long. Early in the second season these elongate, turn down with increasing weight, and grow to a length of five to eleven inches before turning brown and maturing in August. In September the cone opens and winged seeds are discharged to be carried as far as a quarter of a mile by the wind. The scientific name *strobus* probably refers to the conspicuous cone, being derived from Greek and Latin words for pine cone.

On the branches and young trunks white pine bark is thin, smooth and greenish-brown, but with increasing age it becomes fissured, ridged, darker and heavier, until it may vary from less than an inch to four inches in thickness according to the age and exposure.

During the first few years white pine develops a moderately long tap root with spreading lateral roots. This helps to make young trees easy to transplant. As the tree matures the lateral roots develop more vigorously than the tap root, resulting in a shallow root system similar to that of spruce.

White pine lumber ranks among the principal economic woods of North America. It is creamy white to reddish brown, soft, straight-grained, may be cut with ease, polishes well and when seasoned warps or swells but little. Almost everything from ships' masts to matches, including doors, floors, framing, finish, patterns, models, boxes, crating and novelties have been made of this versatile wood, but it is now largely restricted to the more exacting uses. A cubic foot when air-dry weighs twenty-four to twenty-seven pounds. It is probably the least resinous of all the pine woods, but has a mildly resinous odor. Although not noted for its strength, it compares favorably with Ponderosa pine, cottonwood and basswood. In

1932 the total lumber production of white pine and Norway pine, with which it is commercially associated, was 202,533,000 board feet. The largest amounts came from Maine, New Hampshire, Minnesota, Massachusetts and Wisconsin. In 1931 the total commercial stand of white pine and Norway pine in the United States was estimated to be 14,672,000,000 board feet, of which nearly two-thirds was in the northeastern states. The original stand was approximately 900,000,000,000 board feet, about equally divided between the United States and Canada. Although literally king of American commercial woods before the present century, it is now sixteenth among the important sources of saw timber.

White pine thrives on deep sandy loams, but will grow under a variety of soil conditions where adequate moisture is available. It grows in nearly pure stands and in mixture with hardwoods, as well as with hemlock and Norway pine. White pine of the original forests grew to be two hundred to two hundred and fifty years old, with occasional trees of three hundred to three hundred and fifty years. Under modern economic conditions, however, trees are usually cut at sixty to eighty years when they measure from twelve to seventeen inches in diameter and are from eighty to one hundred feet tall. Such stands may contain from 50,000 to 80,000 board feet to the acre. In the original forests, trees from thirty to forty inches in diameter required at least two hundred and forty years to grow. White pine reproduces readily from seed, and with fair soil, sunlight and moisture, will reach heights of ten feet in ten years, twenty-five feet in twenty years, sixty feet in forty years, thus averaging fifteen to eighteen inches each year. Similar trees forty years old may measure from seven to nine inches in diameter and yield fifty to eighty board feet of merchantable material. It is the most rapid growing northern forest tree, occasionally averaging a yearly growth of one thousand board feet an acre over periods of forty to eighty years. It responds to silvicultural treatment and has been more widely planted than any other American tree.

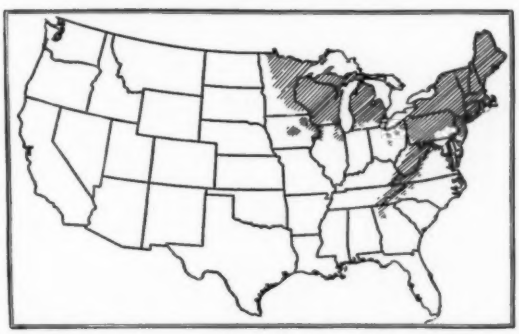
Fire, white pine blister rust and white pine weevil are the white pine's principal enemies, although other pests such as white pine scale, the pine sawyer and several root fungi and rots cause heavy damage. Forest fires are particularly damaging to the young growth. Fire is an enemy common to all trees, but white pine blister rust, which entered this country from Europe about thirty years ago, is peculiar to the five-needled pines and takes a heavy toll. This can be controlled by destroying all gooseberry and currant bushes in the forest and for a distance of nine hundred feet from the trees to be protected. Without the leaves of these plants the disease can neither complete its life cycle nor infect the white pines.

Throughout portions of its range the leader shoots of white pine are killed by the white pine weevil. The tree is not killed, but frequently is so deformed as to make it valueless for lumber. No satisfactory control of the weevil has been developed.

White pine is seldom used for street or roadside purposes, but its vigorous growth and attractive color cause it to be favored as an ornamental tree for lawn and park purposes as well as for a background for other plantings. It is successfully grown considerably beyond its natural range, and has long been planted in northern Europe.

Long tapering cones, slender bluish-green needles in bunches of five and clusters of yellow pollen-bearing blossoms.

Broad, flat-topped, dark gray longitudinal ridges characterize white pine bark.



Natural range of white pine in the United States.

CRANBERRY GLADES

An Intriguing Bit of Back Country in the Old Mountains of West Virginia which recently has been included in the Monongahela National Forest

By P. D. STRAUSBAUGH

With Photographs by W. E. Rumsey

HIDDEN away in the mountains near the western border of Pocahontas County, West Virginia, lies a bit of strangely fascinating country which bears the name of Cranberry Glades. Ever since the discovery of this interesting region, its natural features have attracted the attention of hunters, fishers, botanists, geologists, ornithologists, and naturalists of every sort. The glades proper and the adjoining mountain slopes comprise an area of approximately 8,000 acres, all of which is in a semi-wild state, quite remote from the motor highways and all social and business centers.

Having heard numerous stories concerning the singular beauty of this remote region, its unusual fauna and flora, my friend, The Ornithologist, and I determined to visit it. As we wished to make some collections, and to develop a reasonable degree of familiarity with the entire region, we decided that we should devote at least a week to these explorations. We immediately began to make preparations for the trip, and a few days later, an early hour of a summer morning found us on our way. As we bowled along through the illuminated tunnel carved out of the dense darkness by the lights of our car we were only dimly conscious of the world about us—the delightful coolness of the morning air, an occasional bunny skipping across the road in front of us, out beyond us the interminable darkness—for we were dreaming of the new birds and the new plants we were going to find in the mountain solitudes ahead.

With the coming of dawn familiar objects began to emerge from the shadows of the night and we realized that we had already traversed more than half of the distance to our goal. Two hours later we arrived at Mill Point and just beyond we turned our car from the main highway into an old by-road following in a general direction the course of Stamping Creek. This road is a subsequent development of the log-road over which, at an early time, the lumber extracted from the forests of this entire region was hauled to a shipping point. We kept to this route for about six miles and incidentally we were obliged to open and close as many gates encountered at intervals along the way.

The last of these gates admitted us into a farm-yard where the road ended. Here we parked our car, and after shouldering the knapsacks containing our provisions, blankets, cameras, and other equipment, we set out on the trail over Cranberry Mountain. The trail was rather rough but easy to follow. There were no obstructions of any kind, but burdened with our heavy packs we moved up the ascent rather slowly and considerable time elapsed before we reached the top of the mountain. Here we found the secondary forest cover so dense that any general survey of the region was wholly out of the question, so we put down our packs and consulted our maps to ascertain the lay of the land.

In the Crataegus savannah were very few trees other than the hawthornes. The assumption was that the area had been denuded of its forests and then abandoned, to be reclaimed by the hawthornes. This old giant, with lichen-plastered trunk, is over forty feet high and twenty inches in diameter.

To our left lay Kennison Mountain with Black Mountain on our right. These two mountains together with Cranberry Mountain enclose a triangular depression which is traversed by Cranberry River. At the upper end of the depression a small creek that has its origin in smaller streams from Kennison and Cranberry Mountains, known as Charles Creek, flows into Cranberry River at the point where its course changes from a southwestward to a northwestern direction. Cranberry River has its origin in streams that flow from Black and Cranberry Mountains, and it empties into the Gauley River whose waters joined with those of the Kanawha eventually empty into the Ohio. After making this review of the geography of the glade country, we again took up our packs and resumed our journey.

Our trail now led down the mountain slope and the gentle descent made our burdens seem lighter. The only difficulty that confronted us here was the necessity of repeated decisions as to which path we should

take, for we found a number of trails, all of which seemed to lead in the general direction of our destination. To what extent we were guided by instinct or intelligence, we may never know—but in either case we finally emerged from the forest and came into a clearing where we were able to get a splendid view of our surroundings. At the far side of the clearing stood the little cottage of Johnny Roberts and his wife who represent the human population of this entire region. In front of us the spruce-covered crest of Black Mountain delineated the sky-line, and just below us lay the glades. We crossed the side of the clearing and came to an old log-road which we followed for about a mile; here we plunged into the thicket.

Cranberry Glades surpasses all expectations, and is a continuous series of surprises. This is the Big Glade, some 300 acres in extent, covered with a lush carpet of mosses, lichens and low shrubs in a color-pattern of gray, green, rose and brown. In the foreground are cushions of the "reindeer moss" (*Cladonia rangiferina*). In the distance are shrubs and a few dwarfed spruces.

All about us was mute but unmistakable evidence of the relatively recent history of this region—a once magnificent spruce-birch forest which was destroyed by the lumbermen some thirty years ago. Now the area is occupied by fire cherry, rhododendron and brambles, with a liberal admixture of spruce and birch seedlings, all cooperating in an attempt to lay the foundations of another forest. The decaying stumps and the moss covered trunks lying where they fell, still reveal something of the luxuriance of the forest that stood here in a previous generation.

As we walked along we came to lower-lying ground where the species characteristic of the forest suddenly disappeared and we encountered an alder thicket. The alders grew thickly and the branches were so interlaced that we found ourselves confronted by a sort of natural *chevaux-de-frise* through which we made our way with difficulty, pulling at the branches, trampling them under foot, stooping and dodging about in a manner that would have made a highly entertaining movie-scene. As I view this performance retrospectively it reminds me very much of the Australian crawl, with less rhythmical arm and leg movement in a much more resistant medium. This alder zone terminated as suddenly as it began and we stepped into the open glade.

What a strange panorama to behold here among the mountains! If we could have forgotten our geography for the moment, we could very easily have fancied ourselves suddenly transported to the tundra region of the far north. Spread out before us lay a level area some 300 acres in extent, covered with a lush carpet of mosses, lichens and low shrubs, presenting a motley color-pattern of gray, green, rose, and brown. We had often heard strange and fanciful tales concerning Cranberry Glades but nothing of all this had quite prepared us for the experience we were now enjoying. All about us were the mountains rising to a height well over 4,000 feet. The level of the floor on which we stood lay in the neighborhood of 3,400 feet. We were at the bottom of a gigantic bowl and no matter in what direction we looked, the rim of this bowl stood out sharply against the sky. As we walked about over the moss-lichen carpet we felt as if we were walking on some rich Axminster with a pile several inches in thickness. There was a perceptible vibration of this mat as it was jarred by our steps but no such marked quaking as is observed in a typical quaking bog.

We discovered that beneath this mat of vegetation there was an enormous accumulation of vegetable matter. We were able to force a pole through this substratum to a depth of twenty feet but we did not ascertain how far below this level the mass of humus extended. It seemed quite evident that this depression must have once been occupied by a mountain lake which was gradually filled in by the accumulation through the years of vegetable material provided by countless successions of living plants. As this filling in process goes

The Round Glade, as the name indicates, is circular in outline. It is very interesting, abounding in numerous huge cushions or mounds of the tall pigeon-wheat moss (*Polytrichum strictum*). This mound is three feet high, and is representative of the annual growth of these plants, as they slowly build up to enormous size through the years.

on very slowly, it is quite likely that a typical quaking bog existed here at an earlier period. The water table lay very near the surface but we did not find open pools of any appreciable extent.

We were surprised to find several species of plants characteristic of northern bogs. At one place we saw a rather extensive patch of the buckbean (*Menyanthes trifoliata*), and in two or three other places we found a considerable quantity of the bog rosemary (*Andromeda glaucophylla*). We searched in vain for the pitcher plant (*Sarracenia purpurea*). As the conditions here are apparently ideal for the growth of this species, its absence was interpreted as evidence of the fact that it has never existed as an element of the flora of this region at any stage of its evolution. However, carnivorous plants were not wholly lacking for we found a large number of splendid specimens of the round-leaved sun dew (*Dorsera rotundifolia*). Orchids were abundant but only three species were represented. The beautiful blossoms of the snake-mouth orchid (*Pogonia ophioglossoides*) and those of the grass pink (*Calopogon pulchellus*) gave a lively touch to the somber color scheme, standing out like roseate gems against a dull background.

In one remote corner of the glade we found a few specimens of the little tway blade (*Listera smallii*) which occurs in only one other station within the state. These three species of orchids just mentioned apparently represent the orchid population of the glades proper. The large-fruited juneberry was abundant, although for the most part the shrubs were quite small. This species is relatively rare elsewhere in the state. The most numerous of the shrubs, and those that interested us most, were the ones that are responsible for the name applied to this region, the bog cranberries (*Vaccinium macrocarpon* and *V. oxycoccus*). These plants form extensive mats in many parts of the glade, and even at the time of our visit were well laden with fruit. In the open glades there were a few scattered spruce seedlings and one lone white pine, all dwarfed and stunted, indicating that conditions were not favorable for their best development. Other shrubs more numerous but quite widely scattered were the wild raisin (*Viburnum cassinoides*) and the mountain holly (*Ilex monticola*).

On the margin of this large, open glade was a well-defined zone of sedges. Here we found dulichium and several species of carex. Back of this zone was a continuous belt of alders beneath which grew some aquatic grasses and other herbaceous plants. Skunk cabbage (*Symplocarpus foetidus*), American hellebore (*Veratrum viride*) and blue monkshood (*Aconitum uncinatum*) was also common among the alders. Everywhere back of the alders was the tree zone consisting mainly of spruce and birch with a slight admixture of hemlock. In the undergrowth beneath the trees we found some extensive beds of the American yew (*Taxus canadensis*).

Once a magnificent spruce forest possessed the land,—and to this the scattered, stunted spruce trees now mutely testify. Now much of the area is occupied by fire-cherry, rhododendron and brambles,—mixed with spruce and birch seedlings, and the whole is cupped in a rim of mountains well over 4,000 feet high.

The rich, moss-lichen carpet of the Big Glade is soft, and gives under the step like a rich rug. Beneath the mat of vegetation is an enormous and accumulating content of vegetable matter. A pole twenty feet in length penetrated the substratum that far; how much deeper the humus extended could not be exactly determined.

The moss-lichen carpet was extremely interesting because the general appearance seemed to indicate that there is a vigorous warfare existing between the mosses and lichens. In some places the mosses were apparently successful and gaining ground, while in other places the lichens were overgrowing the mosses and steadily advancing their lines. Species of sphagnum and polytrichum made up the greatest part of the moss flora and cladonias clearly predominated among the lichens. The so-called "reindeer moss" (*Cladonia rangiferina*) which is really a lichen, formed rather extensive patches and its nearly white color added much to the variegated color-pattern of the glade. The bark of shrubs and trees growing in and about (*Continuing on page* 382)

AROUND THE STATES
WITH
THE AMERICAN FORESTRY ASSOCIATION

Quetico-Superior Project Receives Recognition

The Quetico-Superior Project, to create an International Forest embracing the lake and forest lands of northern Minnesota and southern Ontario, received impetus last month on two fronts by President Roosevelt's appointment of a commission to further the plan and by the International Joint Commission's report after extended hearings to the effect that there is no present need for raising the water levels of the region for power purposes. Advocates of the project, led by the Quetico-Superior Council, have fought bitterly the efforts of a power company at International Falls to secure authority for the construction of dams that would raise water levels and thus destroy the natural beauty of many lake shores.

President Roosevelt, in creating the Quetico-Superior Commission, named as its members Ernest C. Oberholtzer of Minnesota, S. T. Tyng of New York City and Frederick C. Winston of Washington, D. C. These three men have long been closely associated as leaders of the Quetico-Superior Council and their appointment assures that the interests of the project will be well cared for. The duty of the Commission is to correlate the efforts of the Federal Government and the State of Minnesota in adjusting the boundaries of the Superior National Forest to embrace the desirable area in the United States. The Commission is also expected to work with the Ontario Government in effecting plans for the International Forest to memorialize the friendly relations of the two countries.

The report of the International Joint Commission removes for the time being at least one of the worst threats to the project, namely destruction of much of the natural beauty of the region by power development. Declaring that the boundary waters involved are of matchless scenic beauty and of inestimable value from the recreational and tourist viewpoints the Commission in its report expressed sympathy with the object of the Quetico-Superior project and declared that nothing should be done to destroy the charm and beauty of the natural forest, lakes, rivers and waterfalls of the region.

At the same time the Commission recognized that there are other interests and aspects that cannot be overlooked and referred to large sums expended at International Falls and Fort Frances for the construction of works for the production of pulp, paper and other commodities. The Commission holds, however, that it is not impossible to reconcile the recreational values of the territory with a certain amount of power development, but it states that at the present time the construction of power works is not necessary or desirable. In the absence of a specific request to develop new power in the region, the Commission declares it impracticable for it to outline at the present time with any accuracy or precision the conditions under which it may become practicable or desirable to regulate the levels of the waters above Lake Namakan. "The purpose of such development," it says, "must therefore necessarily be left for consideration by proper authorities on both sides of the boundary if and when such conditions arise."

Oscar Chapman

To Head New Grazing Bureau

Assistant Secretary of Interior Oscar Chapman has been designated to head up the administration of the new act to control grazing on eighty million acres of the public lands. Approved by President Roosevelt on June 28, the act is available for application at once and Mr. Chapman is proceeding with the organization of a corps of assistants to carry out its provisions as promptly as possible.

A special bureau to administer the act is contemplated, Mr. Chapman said, although the name of the bureau has not been determined. Its personnel will be drawn as far as possible from men in the General Land Office and the Land Office stations in the West will be utilized as needed in carrying out the provisions of the act on the ground. Subsequently it is expected that a special field organization will be required to administer the various grazing districts when established.

The act gives the Department authority to establish grazing districts aggregating not to exceed eighty million acres of the unappropriated and unreserved Public Domain, to issue permits for grazing thereon and to regulate the grazing authorized. Before any grazing district is established, however, a hearing shall be held in the State in which it is located and ninety days shall elapse after notice of the hearing has been published before the district is formally placed under administration. Mr. Chapman stated that the Department is receiving many telegrams from western grazers requesting that areas of the Public Domain be included in grazing districts and that he plans to spend the latter part of July and the month of August holding a series of conferences in the western states at which local residents may have an opportunity to present their views.

Dutch Elm Disease Spreading

The Dutch Elm Disease situation in New York, New Jersey and Connecticut has become so critical, according to Dr. Karl F. Kellerman, of the United States Department of Agriculture, that unless immediate action is taken a disastrous spread of the disease is imminent. It was pointed out that the number of trees killed this spring in New Jersey alone will exceed 2,000. These dead trees harbor the beetles that supposedly carry the disease and unless the trees are destroyed immediately it is feared that the number of beetles will increase so rapidly that control will be almost impossible.

Because of the seriousness of the situation in New Jersey, the Bureau of Plant Industry has moved its research laboratory for study of the Dutch Elm disease from Wooster, Ohio, to Morristown, New Jersey. The new laboratory will be in charge of Curtis May.

Purchase of New Forest Areas Approved

Further progress in the expansion of National Forests east of the Great Plains was made on June 22 when the purchase of 884,803 acres was approved by the National Forest Reservation Commission, bringing the total area approved for purchase during the past year to 4,893,000 acres. Owners of the land will receive $2,129,377 or an average of $2.40 an acre.

The largest purchases were in Wisconsin, 197,248 acres; Mississippi, 161,037 acres; Missouri, 151,067 acres, and Arkansas-Oklahoma, 135,960 acres. All of the forty-eight eastern purchase units shared in varying amounts.

Under the options the Forest Service may enter immediately to develop and extend protection against forest fires and to employ the Civilian Conservation Corps in improvement work.

The WINNING FACTOR

In the Ring It's Training . . . On the Road It's Engineering

● Two wrestlers—strength, weight, and stamina about equal. What factor will make one of them the champion? *Most effective use of power* . . . The same with road machines. The same extra factor accounts for better performance. Between two equivalent machines, the skill of the engineering determines the winner.

● We dare say other Motor Graders are made of as good steel as that used in the Austin 77, and could be made with a power plant of equal horsepower. The extra ability in actual road work—grading, maintaining, ditching, scarifying, spreading oil mix and snow removal—comes from extra horsepower combined with such features of design as these—Floating Drive (solid steel housings around shafts carrying the weight)—Chatter Proof Blade Bracing 60-inch Diameter Circle (blade arms and braces unit welded)—Lost Motion Prevented (ball and socket joints throughout)—Wide Front Axle Design (with Leaning Wheels).

● These are high spots only of complete functional design. Send the coupon for engineering details.

● **NOTE**

Evidence of the Austin 77's leadership was given in the recent large road equipment purchase by an eastern highway department. Of 163 wheel-type power graders purchased Austins took the largest single share (49), the remainder being divided among 6 manufacturers. In the heavy duty 4-wheel drive class, 57% of the business went to the Austin 77 Senior, while the runner-up got less than half this figure.

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Pulpwood Code Due for Early Approval

A Code of Fair Competition for the Pulpwood Industry including a section providing for the conservation of forest resources is expected to receive early approval by the National Recovery Administration. The proposed Code was tentatively agreed upon at a series of conferences on June 26 and 27 participated in by representatives of the NRA and the Pulpwood Industry.

The Code is modelled very much along the lines of the Lumber Industry Code, particularly in respect to the article dealing with forest conservation. This article calls upon the sub-agencies of the Pulpwood Industry to submit to its Code Authority within sixty days rules of forest practice to be followed in its region. When and if approved by the Code Authority, the rules of practice shall become obligatory within fifteen days thereafter for all persons subject to the Code.

The Code provides that rules of forest practice shall include practicable measures on the part of operators to safeguard timber and young growing stock from injury by fire and other destructive forces, to prevent damage to young trees during logging operations, to provide for restocking the land after logging if sufficient growth is not already present, and when feasible to leave some portion of merchantable timber as a basis for growth and a new timber crop. As in the Lumber Code, it is provided that to the extent practicable partial cutting or selective logging shall be the general standard for local measures of forest practice.

It is further provided that the Code Authority and its sub-agencies shall without delay undertake to determine by regions or by forest types the extent to which merchantable sizes of trees may wisely be left as a part of the forest growing stock. Upon a satisfactory determination of such condition, the Code Authority shall promptly establish standards of practice looking to the attainment of this objective. In formulating and carrying out its rules of forest practice the Code Authority and its sub-agencies are required to cooperate with the Code Authorities of other industries whose codes contain provisions for forest conservation.

The executive committee of the American Pulpwood Association is designated as Code Authority and for purposes of code administration the country is divided into five regions as follows: Northeastern, Lake States, Appalachian, Southern, and West Coast. The sub-agencies of the Code Authority, it is provided, shall have as non-voting advisory members one representative of each of the State and Federal organizations within its region which have definite responsibility under State and Federal laws for forestry or forest protection practices. The Code also provides that the Authority and its sub-agencies shall provide themselves with such technical and other qualified personnel as may be necessary.

Section VIII of the proposed Pulpwood Code sets a forty-hour week and an eight-hour day for the industry, while Article 5 sets minimum wage rates at from twenty-four cents an hour in the South to thirty-five cents an hour on the West Coast. The minimum rate applying to the Appalachian Region is twenty-eight and one-half cents, to the Southern Region twenty-four cents, to the Lake States, except Minnesota, twenty-seven cents, and to Minnesota twenty-eight and one-half cents.

American Lumbermen to Visit Central Europe

A group of about twelve prominent lumbermen and timberland owners and others associated with the lumber industry will sail on July 25 for several weeks' investigation of private sustained yield forestry operations in Central Europe, under the auspices of the Carl Schurz Memorial Foundation of Philadelphia. This trip, the plans for which have been largely worked out by Ward Shepard, Advisor on Land and Forest Policies of the Interior Department, in collaboration with the Forest Advisory Committee of the Carl Schurz Foundation, has for its object a direct study of the methods, advantages, and disadvantages of private sustained yield management in Germany, Czechoslovakia, and probably Austria.

The Foundation, in announcing the trip, stated that it had no thought of suggesting that the forestry technique of Central Europe could be transplanted bodily to the United States, and that the principal purpose of the trip was to demonstrate, vividly by example, not only the technique of sustained yield forestry, but the many social and economic advantages of sustained yield management in land use, taxation, employment, and returns to the owner.

"Many of the large forest estates of Central Europe," according to Mr. Shepard, who recently completed a year's investigation of Central European forest policy for the Schurz Foundation, "have been under intensive sustained yield management for at least a century. They form an extraordinarily profitable and secure investment. They have also a large social importance in stabilizing employment, land use, and tax returns to the local community. Our own forest history has been so full of disaster and discouragement that it cannot but enormously stimulate American timberland owners and foresters to see in operation highly successful and profitable private forestry on a big scale. This point of view is doubly important now that Article X of the Lumber Code has gone into effect and America has begun a new forest era."

The party will be under the direction of Professor Franz Heske, Professor of Forest Regulation and Policy in the Forest School at Tharandt, Saxony, and Director of the Institute of Colonial Forestry in that school. Dr. Heske has just completed a three-months' tour of the United States under the auspices of the Schurz Foundation, in which he had an opportunity to become widely acquainted with American foresters and lumbermen and with the national and local American forest problems, especially in their political and economic sides.

The personnel of the party is not yet complete, but up to the time of going to press, the following were included:

W. R. Brown; Brown Company, Berlin, New Hampshire.

P. R. Camp; Camp Manufacturing Company, Franklin, Virginia.

Wilson Compton; Secretary-Manager, National Lumber Manufacturers Association.

George F. Cornwall; Editor, The Timberman, Portland, Oregon.

J. J. Farrell; Northeastern Lumber Manufacturers Association.

R. B. Goodman; Marinette, Wisconsin.

L. K. Pomeroy; Wilmer, Arkansas.

Lee Robinson; Mt. Vernon, Alabama, President, Hardwood Manufacturers Institute.

T. S. Walker; Red River Lumber Company, Westwood, California.

J. W. Watzek, Jr.; Crossett-Watzek-Gates Lumber Company, Chicago, Illinois.

C. H. Guise, Professor of Forest Management, Cornell University.

John Raine, Meadow River Lumber Company, Rainelle, W. Va.

Funds Provided for Wildlife Restoration

The wildlife restoration program set forth by President Roosevelt's Special Committee on Wildlife Restoration and submitted to him on February 8 has been allotted $8,500,000 with which to begin work. The program set forth by the Committee called for $25,000,000 with which to purchase land and $25,000,000 for its improvement.

While the $8,500,000 is available for expenditure through the country, its use will be concentrated most largely in the Mississippi flyway extending through Louisiana, north into the headwaters of the Mississippi and Missouri to include eastern Montana, the Dakotas, Minnesota, Iowa, Wisconsin, Illinois, Missouri, western Kentucky and Tennessee, and parts of Arkansas and Mississippi.

Outlining the program to be accomplished on some ninety areas within this flyway, Jay N. Darling, Chief of the Biological Survey, described the job as one of re-impounding water to provide nesting places and areas of refuge for migratory wild fowl.

Of the $8,500,000 allotted, $2,500,000 was provided from Public Works funds and will be used chiefly for improvement of the areas. The other funds to be used for acquiring land will be expended by the Federal Surplus Relief Corporation in its program of removing submarginal land from agricultural production. This organization is designed for planning and purchasing. After acquiring the properties, the land will be placed with responsible agencies and the Biological Survey will share its allocation with other Federal land administrative bureaus and with the States. Those areas to be turned over to the Biological Survey for administration will consist chiefly of lakes and swamps suitable for ducks, geese and other migratory birds, and will not compete with either the forest, park or subsistence homestead programs. The funds allotted will be limited to the restoration of migratory water fowl.

On July 1, Mr. Darling, Chief of the Survey, set in motion a reorganization of his entire Bureau. Under his direction the Survey is being divided into two major units, a Game Management Division and a Wildlife Research Division. The former will be the administrative arm of the Bureau, and its main objective will be to restore wildlife environment through education rather than stressing policing activities.

"Without relaxation of our efforts to control wildlife predators," Mr. Darling declares, "we are combining these two forces into a new division to be called the Game Management Division, whose business will be that of educators, not policemen. The nation is being divided into ten or twelve major regions, with a director in charge of each, under whom will be a staff of game management field agents. All the research functions of the Bureau will be consolidated under the Wildlife Research Division, which will assemble facts upon which the Bureau's administrative policies will be based."

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EXPLOSIVES DEPARTMENT . . . WILMINGTON, DELAWARE

National Lumber Manufacturers Association to Become a Federation

The National Lumber Manufacturers Association, at its annual meeting in Chicago, late in June, voted to be established in a federation form of organization. Representatives of all the principal associations pledged their cooperation in an effort to bring into the national association's activities all divisions of the lumber industry. At present, the association, in addition to the association memberships in some regions, has individual company memberships in others.

It is planned to bring into the national organization all groups of lumber manufacturers and timber owners, such as the Northeast Association, the National Oak Flooring Association, the Northern Pine and the Appalachian Hardwood Association, as well as the West Coast Lumbermen's Association, and the Hardwood Manufacturers Institute, all of which are well represented in the national association through individual membership. All told, there will be a dozen associations covering all species and regions constituting the national association, which in the meantime will continue its individual memberships in all regions not covered by association memberships.

C. C. Sheppard of Clarks, Louisiana, was reelected president of the National Association. William Ritter of Columbus, Ohio, was reelected vice president and treasurer, while J. P. Weyerhaeuser, Jr., of Tacoma, Washington, and George W. Dulaney, Jr., of Chicago, were reelected vice presidents. Mr. Dulaney was also reelected chairman of the Board of Directors of the American Forest Products Industries.

Fechner Inspecting Western C.C.C. Camps

Robert Fechner, Director of Emergency Conservation Work, left Washington on July 8 for a two months' inspection trip of Civilian Conservation Corps camps west of the Mississippi River. He will visit eleven states—Colorado, Arizona, Utah, New Mexico, Wyoming, Washington, California, Montana, Oregon, Idaho and South Dakota.

Officials of the Forest Service and the National Park Service met the director at Denver on July 11, and will accompany him during his inspection of camps located in the western National Forests and National Parks.

Immediately before leaving Washington, Mr. Fechner announced that more than 100,000 young men, war veterans and experienced woodsmen would be selected in July for enrollment in the Civilian Conservation Corps. The new men will be replacements for enrollees who have already dropped out of the Corps or who were discharged prior to July 1. The enrollment of these new men will bring the strength of the Corps up to 303,000. In addition to this figure, there are 14,000 Indians working in forest camps on Indian Reservations and 2,300 men working in camps established in Puerto Rico, Hawaii and Alaska.

President Creates National Resources Board

By an Executive order dated June 30, President Roosevelt abolished the National Planning Board of the Federal Emergency Administration and the Committee on National Land Problems, and in their places created a National Resources Board consisting of the Secretaries of the Interior, War, Agriculture, Commerce, and Labor, the Federal Emergency Relief Administrator, Frederic A. Delano, Charles E. Merriam, and Wesley C. Mitchell.

The Board is charged with preparing and presenting to the President a program and plan of procedure dealing with the physical, social, governmental, and economic aspects of public policies for the development and use of land, water, and other national resources. The report is asked for on or before December 1, 1934, and shall include the coordination of federal, state, and local projects, with recommendations as to proper division of responsibilities.

The Executive order creates an advisory committee consisting of Mr. Delano, chairman, Mr. Merriam and Mr. Mitchell. The President may add to the personnel of the committee from time to time. A technical committee with no fixed membership is also provided for. The sum of $100,000 which has been made available by the Federal Emergency Administration of Public Works will enable the Board to carry out its work.

New Wood-Peeling Machine Demonstrated in New York

Swinging hammers throwing 30,000 blows a minute against a stick of pulpwood cleaned off the bark "as slick as a whistle" during a demonstration of a new barking machine held on May 17 at the plant of the West Virginia Pulp and Paper Company in Mechanicville, New York. The three ton barking machine manufactured by the Council Tool Company of Wananish, North Carolina, was used on beech, birch, and maple for the benefit of 250 interested land owners. Sulphite pulp is made from the wood. Three men, operating it with a 7½ to 10 horse power motor, peeled the bark from a cord of freshly cut spring wood in half an hour, and wood which had been stored for several months was cleaned of its bark in less than an hour.

Trail Riders Enter Montana Wilderness

Under the leadership of G. H. Collingwood, Forester for The American Forestry Association, the 1934 Trail Riders of the National Forests got under way from Missoula on the morning of July 9 for an eleven-day pack trip into the South Fork and Sun River Wilderness of the Flathead and Lewis and Clark National Forests, in Montana. The party will penetrate the wild South Fork country to the Continental Divide. After crossing they will explore the famous Chinese Wall in the Sun River Wilderness.

Members of the 1934 Trail Riders of the National Forests this year include, in addition to Mr. Collingwood, Miss Anna R. Armstrong, Rutherford, New Jersey; Miss Mary E. Bortner, York, Pennsylvania; Misses Elizabeth Braunecker, Edna Spillard, and Elizabeth Warner, all of Cincinnati; Miss A. K. Dorr, Washington, D. C.; Mr. Sam Dix, Grand Rapids, Michigan; Mr. Sydney R. Dobbs, Brookline, Massachusetts; Miss Dorothy Freye, Springfield, Ohio; Miss Hazel Houston, New York City; Miss Lillian M. Judd, Waterbury, Connecticut; Mr. Henry M. Lucas, Cleveland Heights, Ohio; Miss Sarnia Marquand, Princeton, New Jersey; Miss Clara Noerenberg, Spokane, Washington; Mr. and Mrs. R. B. Parmenter, Arlington, Massachusetts; Miss F. Dorothea Williams, Waltham, Massachusetts, and Mr. and Mrs. K. D. Swann, of Missoula, Montana.

SAPLING SAM RETURNS

Only Dead Husbands Are Perfect!

Rastus was dead. A wonderful funeral was in progress. The preacher talked at great length of the good traits of the deceased brother, what a good, honest man he was; what a good provider for his family; what a loving husband and father—

The widow grew restless.

"Johnnie," she whispered, "go up dar and look in dat coffin and see if dat's yore pa."—*Lumber Cooperator.*

This'll Get Ewe

In Huron, a hewer, Hugh Hughes,
Hewed yew trees of unusual hues,
Hugh Hughes used blue yews
To build sheds for his ewes;
So his ewes a blue-hued yew-shed use.
—*The Kablegram.*

She'll Not Go Wrong

The girl about to travel alone was warned about talking to strange men. At the station the conductor asked:

"Where are you going?"

"To Detroit," she answered, so he put her on the Detroit train.

As the train pulled out she looked out and said: "Ha, ha! I fooled him that time. I'm going to Chicago."—*Lumber Cooperator.*

Aha! You Crook!

He had his Chinese cook for years and finally, after a particularly good dinner, decided to raise his pay. The following pay day the Oriental came around and asked:

"How come too much money?"

"Oh," said his employer, "that's because you are such a good cook."

"So," replied the Chinaman with a scowl, "long time you cheat me, huh?"
—*Lumber Cooperator.*

Mass Production Applied to "It"

FOR REAL GLAMOR WEAR
AN ORCHARD IN YOUR HAIR
—*Wilmington (Del.) paper.*

What Is Reciprocity?

"Mr. Goldberg" (phoned the bank cashier) "our accounts show that you owe us $50. You have overdrawn your account to that extent."

"Is dat so," remarked Goldberg. "Vell, I vant dat you should do me a favor. Go look into your books and see just how we stood in Chanuary."

A few minutes later the cashier phoned: "Mr. Goldberg, your account shows that the bank owed you $2,000."

Goldberg's repiy came triumphantly over the wire: "Vell, did I call you up in Chanuary? Good pie!"—*Lumber Cooperator.*

Historic Memento

Professor (at table)—"James the First introduced the turkey into this country."

Host (trying to carve)—"And this must be the beggar he introduced."—*Sheffield Telegraph.*

CONSERVATION IN THE 73rd CONGRESS

By G. H. COLLINGWOOD

Climaxing a session of unusual interest to foresters and conservationists, President Roosevelt, on June 27, signed the Taylor Grazing Act (H.R. 6462) authorizing the Secretary of the Interior to administer grazing on the unappropriated public lands.

In explanation of his approval of the Act, President Roosevelt issued the following statement: "The passage of this act marks the culmination of years of effort to obtain from Congress express authority for Federal regulation of grazing on the public domain in the interests of national conservation and of the livestock industry.

"It authorizes the Secretary of the Interior to provide for the protection, orderly use and regulation of the public ranges and to create grazing districts with an aggregate area of not more than 80,000,000 acres.

"It confers broad powers on the Secretary of the Interior to do all things necessary for the preservation of these ranges, including, among other powers, the right to specify from time to time the number of livestock which may graze within such districts and the seasons when they shall be permitted to do so.

"Water development, soil erosion work and the general improvement of such lands are provided for in the act."

Passage of the bill created an unusual situation. As originally drawn the measure was sponsored both by the Agricultural and Interior Departments. Amendments appended by the Senate and later agreed to by the House, however, brought about a sharp difference of opinion between the two departments over the real meaning of the bill as passed. Based upon an opinion from his solicitor, Secretary Wallace entered a strong protest to presidential approval of the bill on the ground that the amendments destroyed its conservation character, extended permanent rights to present users of the Public Domain and virtually gave the federal states actual control over the public grazing areas. Solicitors for the Department of the Interior, however, took an opposing view, and Secretary Ickes referred the bill to the Attorney General for an opinion. Although the Attorney General's opinion was not made public, it is understood he supported the position of the Interior Department, and acting upon the legal advice from the Attorney General, President Roosevelt made the bill law by attaching his signature on June 27.

Officials of the Department of the Interior declare that the law as amended will be administered as a true conservation measure as conceived in the original drafts of the Taylor Bill.

Senator Norbeck's bill, S. 3741, proposing to transfer 40,600 acres of forest land within the Harney National Forest to the State of South Dakota for inclusion in the 60,000 acre Custer State Park was vetoed by President Roosevelt on June 27. This bill was hurriedly passed during the last days of Congress by the Senate and House, without public hearings. It was identical with one introduced by Senator Norbeck in 1931. As in the previous case, The American Forestry Association pointed out that if this bill should become an Act it would establish a precedent under which other States could make similar claims for National Forest lands for State Park and Game purposes.

"I am disapproving this bill at the earnest request of the Department of Agriculture," stated the President, after announcing his determination to veto it. "I appreciate the desire of the State of South Dakota to add to its existing State Park this large area of National Forest land lying north and south of it. Nevertheless, I do not think the time is ripe for a final determination of the problem. So many changes are in process in the administration and development of government owned land, both State and National, that I think the final policy should become more clear and definite."

The Seventy-Third Congress, which adjourned on June 18, was one of marked accomplishments for forestry and conservation. The spectacular first session which convened on March 4, 1933, immediately after the inauguration of President Roosevelt passed acts creating the Civilian Conservation Corps, the Tennessee Valley Authority and the National Industrial Recovery Administration under whose Lumber Code of Fair Competition is included a far-reaching program of forest conservation.

Appropriations for the Forest Service, the Biological Survey, the National Park Service and the Bureau of Fisheries were generally reduced, but the reductions were more than replaced by allotments from emergency funds. The outstanding example is that of forest acquisition under authority of the Weeks Act. In this case all purchase activities would have been brought to a close with the negligible appropriation of $85,854 for the year beginning July 1, 1933, but on May 20, 1933, President Roosevelt allocated $20,000,000 for this purpose. As a result the Federal Government will shortly have title to 4,896,000 acres acquired since this money was made available. This represents a larger acquisition of lands for eastern National Forests than during the whole twenty years since the passage of the Weeks Act in 1911.

Outstanding among appropriation gains was the addition of $750,000 to the program of cooperative protection of forests against fires as authorized in the Clarke-McNary Act. Half of this became available from unexpended appropriations which had been held in the Treasury as an economy measure for the remainder of the fiscal year ending June 30, 1934. It was turned over to the States by executive order. The other half, for the current fiscal year, came in two allotments. One of $150,000 was added to the regular Appropriation Bill, and another of $225,000 was carried in the Deficiency Appropriation Bill. Thus the sums available for the two fiscal years were increased to $1,565,635 and $1,573,619, respectively.

The Appropriation Bill carried also a new item of $150,000 for the control of the Dutch elm disease and $50,000 for research to improve methods of control. Also $360,000 was made available for control of gypsy and brown tail moths in the northeastern states. All reference to authority and funds for white pine blister rust control was left out of the Act, but the budget provided $940,000 of emergency funds with which to carry on this program during the remainder of the calendar year.

An Act sponsored by Senator Bankhead and Representative Hill, each of Alabama, authorizes governors of States which have delayed passing acts enabling the Federal Government

to establish forest purchase areas within their boundaries to present to the National Forest Reservation Commission a petition signed by a majority of the members of the legislature inviting the Federal Government to make purchases.

These accomplishments for forest protection and acquisition are in line with the government's program set up under the conservation clause of the Lumber Code, but fall short of the full program. Federal credits for the lumber industry and coordination of tax reform have less to show. The Fletcher-Caldwell bill, to authorize the Reconstruction Finance Corporation to make loans to forest industries with the approval of the Forest Service, failed during the last days of Congress.

A Senate resolution authorizing the Secretary of Agriculture to study the pulp and paper industry to determine ways and means of making this country self-supporting will result in a report from the branch of research in the Forest Service during the late summer.

Passage of the Hunting Stamp Act, under which all hunters of migratory birds must pay $1.00, is expected to furnish the Biological Survey with approximately a million dollars a year for administration of the migratory Bird Refuge Act and for the acquisition of lands. In addition, $8,500,000 has been made available by executive orders for acquiring land for bird refuges.

Several National Park bills of far-reaching importance, including one which lays the foundation for the Everglades National Park in southern Florida, were passed. Because of the assurance provided in a protective clause written in by representatives of The American Forestry Association and several other national conservation organizations there will be no large expenditures for road building or undesirable development within the area to destroy or impair the natural beauty and remarkable wildlife.

The boundaries of the Great Smoky Mountains National Park and the Mammoth Cave National Park were adjusted so that their areas will be acceptable to the Department of the Interior for administration by the National Park Service. An addition of 3100 acres to the Chattanooga-Lookout Mountain National Military Park in Tennessee was accepted from Adolf Ochs and associates. Arrangements were also completed, by Act of Congress, to include a small addition to the Carlsbad Cave National Park in New Mexico in exchange for permission to enter certain caves to remove guano deposits.

Development of Indian-managed tribal forests is assured through passage of the much discussed Wheeler-Howard Act in the last days of Congress.

Senator Carey's bill for enlarging the Grand Teton National Park by adding 235,000 acres of Public Domain, National Forest and private lands was not passed. This bill encountered objections from some sources on the grounds that inclusion of Jackson Lake Reservoir within the extended boundaries would violate an established National Park policy against the commercial use of waters within National Parks.

Similarly, the Wagner-DeRouen bill, to authorize the Secretary of the Interior to make recreational studies of all Federally owned lands and to recommend transferring to the States such areas as he believes best meet the needs of a State recreation program, failed to pass.

All bills which Congress failed to pass on June 18, automatically died.

Shorter Duck Season Recommended

Following the annual meeting of the Advisory Board, Migratory Bird Treaty Act, in Washington, D. C., on July 11 and 12, Jay N. Darling, Chief of the Biological Survey, announced that the Board has recommended to Secretary Wallace that the shooting season for ducks be reduced to thirty days between October 1 and January 15, the time and spread of the season in each State to be recommended to the Biological Survey by the State Game Departments. "This provision," says Darling, "cuts down the number of days that the birds may be shot, but it gives each State the privilege of suggesting its own season. A State may take thirty days consecutively. It can choose five consecutive days each week for six consecutive weeks. It can take three consecutive days each week for ten consecutive weeks, or it can choose two consecutive days a week for fifteen weeks."

In the Board's opinion, this plan is the best way of dealing fairly with both the birds and sportsmen and of meeting a critical duck situation. The Board also recommended that the baiting of waterfowl in the vicinity of shooting stands or blinds be prohibited except under permits to be issued without charge by the Secretary of Agriculture. Hours of shooting, according to the Board's recommendations, would extend from sunrise to sunset on each day of the season, thus cutting out the shooting formerly permitted for a half hour before sunrise. Secretary Wallace has the Board's recommendations under consideration for early action.

Book Reviews

PIONEERING WITH WILDFLOWERS, by George D. Aiken. Published by the author at Putney, Vermont. 122 pages, with 106 groups of illustrations and an Index of scientific and common names. Price $2.00.

Charmingly and appropriately George Aiken has titled his book, because the last stand taken by some of our wildflowers against encroaching development presents a new frontier in which we can really "pioneer" in their behalf. Pushed ever backward, these wildlings have seen our so-called civilization established in the realm that was once their own. Forests have disappeared and cities have sprung up; roads have been built and marshes drained for agricultural purposes, and through it all they have suffered—almost extinction. If we "hope to save some of them," says the author, "it must be done through the prompt action of our people." And to this end he offers this beautiful little book, replete with authentic illustrations, to give in plain, non-technical language the requirements of the wildflowers for survival, and information as to how to propagate and grow all worthwhile species.—L. M. C.

THE PHYSICAL PROPERTIES OF LUMBER, by G. F. Ivey. 257 pages. Published by The Southern Publishing Company, Hickory, North Carolina. Price $2.00.

Government data dealing with some of the principal timbers is compiled and presented from the viewpoint of a manufacturer and wood user in G. F. Ivey's "Physical Properties of Lumber." United States Forest Service publications are freely drawn upon and many of the line drawings of typical leaves, twigs and tree fruits by the late Mrs. A. E. Hoyle are used to illustrate more than sixty typical timber trees of the United States. The book contains grading rules for hardwood and pine, tables showing the weights, hardness and shrinkage of lumber, and also statistics of production.

It was prepared to meet the need of schools in connection with manual training, but it may reach a larger group and prove helpful in connection with courses on nature study and physical geography.—G. H. C.

TERMITES AND TERMITE CONTROL, by Charles A. Kofoid and others. Published by University of California, Berkeley, California. 734 pages, illustrated. Price $5.00.

Termites and Termite Control is a compilation of authoritative articles on the termites of the United States, Mexico, the Canal Zone, the West Indies, Hawaii and the Philippine Islands with recommendations for prevention and control of termite damage as submitted in a report to the Termite Investigation Committee.

Each of the fifty-six chapters of the book is the work of recognized authorities and the material combined in one volume makes an encyclopedia on these insects. Here the lay reader or the scientist will find practically the last word on a form of life which is causing high property damage throughout most of the United States. This book may clear away some of the agitation caused among home owners by termite operators who are not careful about arousing unfounded fears on the part of their prospective clients.

Forestry Questions Submitted to The American Forestry Association, 1713 K St., N. W., Washington, D. C., Will be Answered in this Column. . . . . A self-Addressed Stamped Envelope Accompanying Your Letter will Assure a Reply.

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QUESTION: How much forest land is planted each year in the United States?—E. R., Idaho.

ANSWER: In 1931 153,460 acres were planted by Federal, state, municipal and private agencies.

QUESTION: Could you furnish me with a list of the States that tax bill-boards along public highways? What efforts have been made in Pennsylvania to enact such a Law? —E. A. S., Pennsylvania.

ANSWER: This question was referred to The American Civic Association, from whose reply the following is quoted:—In Connecticut a license fee of $100 is required for each outdoor advertising company; in Maryland, a graduated fee of from $50 to $200; in Massachusetts, $50; in Nevada, $5; in New Jersey, $100; and in Vermont, $25. States requiring a permit fee for boards are: Connecticut $3-$9; Maryland, a half cent per square foot, with a minimum of $1; Massachusetts, $4; Nebraska, twenty-five cents to $5; New Jersey, three cents per square foot with no minimum; New Mexico, $5; Vermont, fifty cents to $9.25.

Permits may be refused in Connecticut, Maryland, and Vermont, if the sign obstructs clear view of road; in Massachusetts if the sign menaces health, safety and public welfare or unusual scenic beauty; in Nebraska if the sign is within the limits of the highway right-of-way; in Nevada if the sign measurably destroys the natural beauty of the scenery or obscures clear vision; in New Jersey if the sign would injure property or public interest; in New Mexico if the sign would menace public peace, health or safety.

The Pennsylvania law requires that no bill boards may be erected within the right-of-way without the consent of the authorities responsible for the maintenance of the highway, and no bill board may interfere with clear vision along highways at curves and at intersections.

An unsuccessful effort was made to pass a bill at the 1931 session of the legislature, which would have provided an annual license fee for outboard advertising companies of $100 and annual permit fees on all bill boards or structures of three cents per square foot. The present provision for safety would have been strengthened, as bill boards would have been prohibited within 500 feet of the intersection of a highway with another highway or railroad or street railway at a point where it would obstruct or interfere with the vision of a vehicle, train or car.

WOOD - USING INDUSTRIES IN COMMUNITY LIFE

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chiefly hickory for the rounds, sugar maple or ash for the posts, legs, and back pieces, and hickory bark for the seat. Implements are elementary and few.

Some of these farmers make other simple wooden articles—plow stocks, tubs, handles for tools. Others have become adept at making more complicated pieces—kitchen cabinets, porch and lawn furniture, bedsteads, and mantels. Some have learned to copy old furniture that has been in their families for a hundred years.

One farmer in a remote Kentucky highland county, whose roads are often the beds of creeks along the narrow valleys between steep hills and mountains, has gained practically a national reputation as a maker of musical instruments from local woods—chiefly dulcimers, violins, and banjos. He has made more than two thousand dulcimers of poplar, maple, black walnut, and cedar, and has sold them all over the United States.

Basket weavers of this same highland region draw on the forests and streamsides for materials for their fireside industries which have brought them their chief incomes for generations. Old-fashioned splint baskets are made of white or basket oak and their handles of oak or hickory. The baskets are sometimes colored with local walnut-bark dye. Willow baskets—largely made by women as the men make most of the splint baskets—are coming to the fore. Basket weaving in these parts is being adapted to other uses that give opportunity for the exercise of considerable ingenuity and skill. Ferneries and flower holders, magazine and letter holders, fire-place and waste baskets, serving trays and lunch baskets, serving baskets and bassinets are among the simple products of the forest that are shipped out from this primitive country to those who appreciate handcraft work. The settlement schools have helped to stimulate the mountaineers' interest in the old patterns and in the new modes and to find a wide outlook for the handwork of these isolated people.

Individualism is merged with the community spirit in keeping alive and making into a powerful local influence the native wood skill of the people, in a community work project in the Shenandoah region of Virginia. Here, in a gradually developed plant composed of workshops, dry kiln, and paintshop, a community group is making beautiful furniture from native woods—accurate, hand-rubbed reproductions of early American pieces found in Virginia homes. Pride in honest craftsmanship and the working with nature rather than against it, form the keynotes of the story of this little group which has attracted the interest and support of public-spirited people, many of small means, from a distance. The Machine Age will never enter these workshops, according to its leaders, who have added to its output for those who cannot pay large prices such small wares as toys, puzzles, bird houses, garden ornaments, all made according to the best designs. It has still another connection with nature's prizes for the owner of one of the most beautiful of the Virginia caverns several miles away has offered its graystone entrance hall for a display of these handicrafts. The community group also now conducts the cavern's attractive tearoom.

Again and again the study revealed a genuine sense of responsibility toward his people and his locality on the part of a rural factory owner that is not characteristic of his city cousin. That this is not undeserved is shown by the owners' frequent commendation of the character of rural workers. "They are better than city workers" declares a chair manufacturer. "They are more anxious to learn, are more steady, regular, and dependable." Their counterpart is found in the words of the majority of the workers, many of whom take real pride and interest in their work, often feeling that it is novel and not easily come by in rural communities. Theirs is an understanding relationship that can perhaps best be developed under country conditions.

Testimony was prevalent as to the desirable effect of these rural industries on town-and-country relationships, on employer-and-worker relationships, on incomes and on community conditions, although perhaps no one factory was a model of its kind. Directly and indirectly they have helped to bring improved roads, better schools, better churches, better medical facilities. Their wages have helped to bring into the homes all those things that bring the world nearer while not destroying the peace of the country. They help to keep young people in the community and help to keep them satisfied. In short, in not infrequent instances they seem to form the basis of the welfare of the entire community.

FOREST ROADS

(*Continued from page* 342)

prime of life and hoary patriarchs alike, preserved close to the swift way, will become integral with forest scenery which may endure through centuries, for the benefit, pleasure and upliftment of thousands, or even millions of motorists.

Bridges related to sylvan areas will vary in design, scale and materials of construction, depending upon the type of road, its volume of traffic and the size of the stream or canyon to be spanned. Timber construction might be employed over small waterways on lesser park and county roads. Stone bridges, when happily designed, may prove the most beautiful where the demands and scale are moderate. Perhaps the type next in merit for its aesthetic possibilities is the suspension bridge. But when strength, lightness and grace are embodied in a concrete bridge, it becomes often the most noble and impressive for big scale projects. Steel bridges, with the exception of those of refined design, precisely on account of the metal involved, seem foreign to the spirit of the woods. Road bridges of the forest should be simple, functional, unobtrusive. Decorative form might be expressed in the piers and parapets but by using restraint, sculptural ornament might well be confined to the approaches, where animals, birds or plants of the adjoining forest can be symbolized. It will be far better to avoid even this degree of emphasis unless an able sculptor fully in sympathy with the problem is employed.

The aim of preserving inherent scenic values along forest roads demands the consideration of a wide range of aesthetic factors, and along with procedure in road construction, certain utility factors involving the proper design, location and treatment of objects or structures fashioned by man.

In the event of a road rambling through elevated timber lands, there will be instances

where vistas of remarkable beauty or extent can be revealed by the careful removal of but few trees. Prospects of undulating forest fastnesses, mountains, valleys, deserts, lakes, rivers, or ocean will be among the types included. Such tree eliminations deserve thorough study and when authorized the work should be supervised by one justly capable of creating a noble open-screen or frieze picture by this process. Should the timber be on public lands, permission to cut will probably be granted after it is proved that the advantage accruing from such a change will be exceptional. But when the forest is privately owned, parcels can either be bought outright or scenic easements secured over the limited affected areas. Such easements might be in the form of strips bordering the right-of-way or in units lying between the road and potential vistas in one or several directions. No cutting will be required in the many cases where the foreground trees do not obstruct the view because they lie below the line of the eye in relation to distant beauty. Then, only scenic easements will be essential.

Any buildings necessarily related to or placed within the forest should be so well designed as to blend unobtrusively with their environment. These will include park administration buildings, taverns or supply houses, of a character permanent and substantial. Service stations, stores, eating houses and refreshment stands, tending to be cheap and temporary, especially when on private lands, should, even so, be good in plan to harmonize with their settings. Broad rights-of-way will insure their being set back far enough to minimize any possible adverse effect upon the appearance of the highway.

Utility poles for light, power and telephone should be located with the aim of studied obscurity. In hilly or mountainous country for example, they should follow along the topography above the road. The reason for this is that the observer from the average or closed car cannot conveniently gaze far upward into the higher levels but will, on the contrary, enjoy the down slopes where his vision is usually comfortable and extended. When this practice is heeded, noble views will rarely be marred by utility poles. Along level forest reaches poles should be set just as far back from the road center as practicable, where their identity will tend to be lost among the trees.

Advertising signs are normally prohibited in National and State Forests and Parks. But when the road passes through private timber, its owners—out of due consideration for the public and the latter's universal condemnation of the malpractice of either hiding or destroying natural scenic beauty—should be glad to do all in their power to curb or stamp out this evil. We should achieve results that will render it possible to invite our citizens and foreign travelers alike to the enjoyment of tree landscapes unblemished by reminders of cities or commodities. The surest means of ultimate control must lie through legislation such as has already been enacted in various sections of the country.

Forest roads serve as portals to a highly beneficent enjoyment of nature, offering unfettered passage for wheeled wings to renewed life. Even those motoring purely on business are senstive to supreme instances of beauty. Roads lead into that mysterious realm ruled of old by Pan, the god of pagan glory. There we can continually absorb as by magic, new impressions of delectable sight, sound and smell, of touch and taste. We find lilt and cadence in the sweep and swing of happily conceived grades and curves, and a poem of sublime signature written in the trees through which they pass.

Down cloistered roads of memory we can picture groves of alders and birches etching delicacy and grace in silhouette against the dark blue-green of conifers, heavily massed. In sequestered mountain valleys the quaking aspens beckon with tremulous charm, betraying all the vibrant movement of lovely dancing maidens. Rows of poplars rise stately as harps of the wind, while eucalyptus in noble clusters bend supple and free under stress of storm, revealing silvered lights beneath their swaying foliage. Through the immense groves of pines and firs with their undulating magnificence may be heard—even more poignantly than from the sea shell—the deep and lonely chant of the sea. In the redwoods, as in no other groves, we may sense calm, vastness, and a living, breathing antiquity.

THE ROMANCE OF THE GOLDEN TROUT

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tremely high altitudes far above timberline, where there is no sign of surface insects, and apparently no feed of any nature. Not only in the great, deep lakes, that lie in granite cups like sheets of blue glass, at 11,000 feet and higher, but in scores of tiny, rock-bound tarns, about the right size for a bath tub, he will be flourishing. In that clear, calm, apparently sterile water, will be no sign of life, but a cast fly will bring a dash of crimson and gold from the rocks below, and a flashing, leaping flame of a trout, to relieve your high-altitude lassitude.

About 1918 began the first efforts at scientific propagation of the golden, and this pioneer work was conducted by George McCloud, superintendent then and now of the Mt. Whitney State Hatchery, near the eastern base of the range. An egg-taking station was established at high, bleak Cottonwood Lakes, and mature fish were taken from a connecting stream, as they progressed up its course in search of spawning grounds. The eggs were placed in large cans, especially designed for packing on a mule's back, and taken down twenty miles of precipitous trail, where trucks completed the journey to the hatchery. About 700,000 golden trout eggs were hatched that year, with a loss of but ten per cent, and the experiment proved epic. The little fish thrived, as did their rainbow cousins, in the hatchery troughs. They remained golden in color, and adapted themselves in all suitable waters where planted.

Each summer, since that first successful experiment, from 800,000 to a million eggs have been taken from the Cottonwood station. And each autumn many cans of the little fish are packed far back into the range and distributed to waters, barren of fish. So the future of this most remarkable of all game fish is secure. But, heavy fishing, even in the far-back, little known lakes and streams of the range, is taking a great toll, and already they must be restocked.

It is difficult to get a picture of the hatching and distributing operations from a distance—and to appreciate the infinite care required throughout the operation. In the long, cool hatchery room at the Mt. Whitney plant the men watch the scores of troughs, regulating the flow of fresh, cold water. Daily the troughs must be scrubbed clean, the darting little fish dipped into other troughs, then back.

Fresh, chopped liver has proven the best food, and is brought by railway and truck each day from the city, a distance of 250 miles.

Planting operations, which complete the early life cycle of the little fish, are intricate and require great care and preparation. The fish cans will be placed on trucks and carried to the designated road-end, where gentle and sure pack mules must be ready to take over the burden—two huge cans slung to the cross-buck saddle of each animal. If a long trip is to be attempted stops must be made, the mules unpacked, and the water in the fish cans changed.

Only streams and lakes devoid of other trout are planted, as it is deemed essential —and properly so—to maintain the golden trout true to type and free of hybridization with other varieties. In a few instances they have descended over falls and rapids to lower waters and there mingled with the native rainbow trout, producing hybrid fish not one bit less gamey than either parent, but with a mingling of markings that destroys the identity of both.

Natural propagation of the golden after transplanting depends somewhat on the feed conditions, and, of course, is largely controlled by the extent of the summer fishing. In lakes having no steady inflow and outflow they cannot increase, for, with that true instinct of the Salmo family, they will not spawn except in running water. In recent dry years the feeding streams to many lakes have dried, and it is doubtful if fish in such water can ever propagate. But, there is much yet to learn about these wonderful trout, even by our best trout culturists, and my own meager knowledge has been gained only by observation while on many fishing trips into their habitat, verified by the findings of those scientifically engaged in the work.

From plantings in many scores of Sierra lakes and streams and experimental plantings in other western states, it appears that the golden trout will retain its color and other characteristics only if its environmental home is similar to its native conditions of altitude and terrain, such as exist in the High Sierras. Plantings in California in streams where conditions are not comparable to the trout's native waters have failed to reproduce the fish true to its original form. On the other hand, plantings of golden trout in Montana under conditions similar to those of the High Sierras have produced the fish true to its native color and nature.

For the fisherman the golden is properly a "fly" fish, and he will nearly always take the feather lure with the savageness of his famous cousin, the rainbow. He does not leap on all occasions, after being hooked, as does the rainbow, although I have had a pound and a half fish leap six times in as many seconds, and as often as the line became slack. But failure does not prevent his waging a fast and savage battle. He takes most of the standard flies, as would other trout, under similar conditions, but has a decided preference for the bright ones, such as Royal Coachman, Professor, and Queen of Waters. And he will take them almost any time of the day so long as the angler is not too plainly in sight. In the shallow little streams, which wind through the bright green hair grass in the lake basins, the fish will scatter, like darting flames, from a too-quick approach; then, if the angler kneels, or steps behind a rock, they at once return, and dash savagely for his fly.

It is of course the vain hope of all fishermen in the "high country" to take a record golden, for all his clan are forever looking forward to the day of "the big trout." The record fish, so far as is known, weighed about

seven and one-fourth pounds, and came from Cottonwood Lakes. This, any trout enthusiast will agree, is "a whale of a trout;" and it may mark the limit size of these fish. But, no one really knows. There are great, deep lakes up there at 11,000—and even over 12,000 feet altitude—which have been stocked for many years, and some of them have been fished scarcely at all. Perhaps there is a giant of the species—or a lake full of them—awaiting the summer visitor.

Each summer more pack trip vacationists are invading the range, and it is well, perhaps, for the future of the golden trout, that their alpine habitat can only be reached during the three months or less of midsummer. Early July often finds the high passes still blocked with snow, and few but the hardiest care to brave the freezing nights of late September. Fortunately most of these summer visitors, practically all of whom fish, are good sportsmen, and do not take more trout than can be used for camp fare; but in some instances parties have taken far above their legal—and moral—number of fish, often to throw them wastefully aside.

The economic value of the trout, since being widely distributed, can scarcely be computed—their existence is a magic magnet that attracts all outdoor lovers. Packers, outfitters and guides located along both sides of the Sierra offer various high country tours, with golden trout fishing always a leading feature. In the hotels and camps of Yosemite and Sequoia Parks on the west flanks of the range; in scores of mountain resorts along the desert slope, from Mt. Whitney to Mono Lake; in the sporting goods stores and clubs of San Francisco and Los Angeles, and further afield, each summer one hears "golden trout talk" and plans.

Thus, from his modest beginning in that little brook, in which the parent fish still manage to thrive, the golden has become one of California's major game fish, to lure us through the winter, as we pore over maps and "grub lists;" then to materialize next summer as the fighting, surging flame of gorgeous color he is. Always we pause, devoutly, to admire the first goldens of the season. Then we flour them, fry them quickly in deep fat—and like pagans, devour them.

NATURE'S GREATEST INDUSTRY

(*Continued from page* 359)

from the nerve-tiring industries of life! One pictures the Psalmist reposed, lifting his eyes to the lush, green meadow sprinkled with daisies and dotted with buttercups; a lark singing overhead; a gentle breeze murmuring through the near-by trees. Could one get nearer to the symphony of heaven?

This great music festival of Nature is the product of the musical contributions of many players. Let us look at some of them. One of the most familiar musicians is the common cricket. This little rogue, serene but saucy, comes out at night when his black jacket is best camouflaged, and fiddles away on his instrument for hours. Millions of these black fellows may produce a symphony of their own. Usually only the males participate, and the music is produced by rubbing the rough edge of one wing over the scraping edge of the other wing. They do not really "sing," for they have neither lungs nor vocal cords. There is a cricket in Sicily so large that it can be heard for a mile. The cricket is a famous gloom-chaser, and is often referred to in the phrase, "as merry as crickets." The learned Scaliger always kept a box of them in his study to cheer him up. Many races have kept them in cages for their music, much as we keep canaries now.

A near relative of the cricket, the locust, is also a famous musician. This fellow seems to carry a buzz-saw with him, but he has never been found sawing any wood. He is the most successful noise-maker in the insect world, and no carnival vendor can imitate his squawker. Great numbers of these insects sometimes drown out even the noise of city streets, but the music of a few locusts scattered about in the trees of one's back yard greatly add to the cheerfulness of any summer day.

The katydids have the best enunciation in all Nature. They start their festival in August and September. So closely do they resemble green leaves, that it is difficult to see them. They are certainly among the handsomest, cleanest, and most musical of all the insects.

The birds probably rank above the insects in musical ability, for they really sing. The mockingbird is a true artist with a very changeable temperament. His flood of song fills the garden—although he may tyrannically drive all the other birds out. The Whip-poor-will, almost as famous as the katydid for good enunciation, is a favorite of many. Its call, floating in with the evening dusk, is always enchanting.

Some of the loveliest singers are the thrushes, with their fluted trills. The wrens have a sweet voice, and the catbirds are quite melodious. The chickadee, pewee, phoebe, and cuckoo, all have derived their names from their songs. The mourning dove has a low, plaintive moaning song which some people think is depressing. Crows, hawks, and woodpeckers do not have any song. One of the outstanding features of bird-song is its "time." Each bird keeps its own faultless time, which helps to identify it. The music of the night is especially delightful. Did you ever sit for hours out in the woods on a log at night—just listening? One of the quaintest nightsongs is that lyric concert of the frogs. It may continue all night, interrupted only by an occasional "plop" and a faint splash of water, while the sonorous notes of the bull-frogs, like gutteral trombones, may resound for a mile.

Then, there is that notorious night villain, the owl, perched in some hollow sycamore, rending the night air with its wistful and melancholy notes, like a ventriloquist. It may carry on a weird, mysterious conversation with another of its kind—reminding one of two sages talking over the universe. He is the real maestro of all the night musicians.

One of the best places to hear Nature's choice music is in a marsh. The grasses are whispering together; the water is softly lapping against sycamore roots; and snake-feeders dart about with a gentle hum. There is the splash of a bass, the laughter of a loon, or the liquid notes of a red-winged blackbird rocking on a near-by flag. Then the cry of a bittern, and the piping of a plover—sweetest of marsh sounds. To this may be added the honk-honk of a flock of Wild Geese passing overhead, and the hum of insect wings on every side, while a gentle wind is transforming the tree tops into a great aeolian harp. Could any scene be more complete?

WILDERNESS JITTERS

(*Continued from page* 355)

then the half-expected happened. Just as we got opposite to them one of the shapes stretched out an eight-foot neck and bit Eddie on the hip pocket. He jumped into the air with a screech and whirled around so fast his hat was on backward when he landed.

Now, I may not be a bloodhound, but I can scent trouble in a break like that, and probably the high Cascades have never witnessed a more disorderly retreat than the one that took place directly after this dastardly attack on Eddie's person. Up to this time we had maintained a more or less dignified front, but when that animal reached out and practically bit a leg off Eddie we ceased trying to be gentlemen. As one we dove into the dense and almost impenetrable underbrush of the mountainside and we only stopped climbing when we became too weak to take another step. When Eddie fell down I fell over him and there we lay all tangled up like a hatful of angleworms.

"Hoof!" gasped Eddie, his face the color of the bottom side of a catfish. "I'm through. This is the end. That *was* a camel that bit me!"

"No question of it," I gurgled. "I recognized it from a picture I saw on a barn once."

"That makes it unanimous," said Eddie, feeling cautiously at the region of his hip pocket. "Let's get out of here. We can slide down this hill onto the road and if our hearts will stand the strain we can get to the cabin in half an hour." He got his pack out from under his chin and with all the verve and sprightliness of an Easter lily plucked two weeks before, started down the mountain.

The underbrush was thick and wetter than the middle drop of the Pacific Ocean, but in our demoralized condition we couldn't be bothered. The thing to do was to streak it for the cabin and lock the door. Sliding, slipping and skidding through the brush and ferns, we came out into the foggy light of a wet day on the edge of the highway and, without looking to see what was in front of us, leaped for the road. It was only a five-foot jump, but we flopped right into the same fate as the monastery egg—out of the frying pan into the friar. In front of us, lined up in a dismal semi-circle, stood three full grown elephants!

"Tell 'em I died game," choked Eddie, as he covered his eyes with his hands and rolled into the ditch.

I gave three racking shudders. "Let 'em guess!" I gasped, and, frantically, like a tight rope walker with a beetle in his tights, I dove in after him. Several seconds after I got there a black thing drew up beside me. It was my shadow!

Cautiously I uncovered my head and opened a guarded eye. For awhile I just lay there mistaking artificial respiration for natural breathing and my heart knocked like an old Model T trying to climb the roof of the Methodist Church. There could no longer be any doubt of what we had seen. Elephants

were not animals one easily mistook for pine squirrels or coyotes under any circumstances. I felt I couldn't be completely wrong. What really brought me to my senses, however, was the fact that out of the corner of my eye I caught a glimpse of what appeared to be a campfire with two forlorn men huddled over it. Staggering to my feet I wobbled up to the fire and joined the family circle.

"Excuse me," I croaked, "but have either of you gentlemen any whisky? A man has just fainted." I pointed to my companion still lying in the ditch.

"B'gosh, I hate to give it up," said one of the men in a discouraged tone. He pulled a small flask from his pocket and handed it to me. I tipped it to my mouth.

"H-m-m," I choked, handing it back to the owner. "It's practically made a new man of me. I can't bear to see anybody faint."

My rescuer stared at me with new interest. "Say, buddy, wot's the big idear? I thought ye was dyin'—"

"I was," I replied. and went back to Eddie. Getting a half-Nelson on his neck I turned him over and the rain, striking his unprotected face, woke him up. If his own mother had seen him then she would never have spoken to his father again. "Come on," I urged. "It's all right. They were real elephants."

Eddie had a stunned look in his eyes as if he had just been missed by a falling bull block. "That's what I was afraid of," he groaned, and oozed back into another peaceful collapse. I returned to the damp elephant herders by the fire.

"See here," I said, "A man really has fainted. Isn't there something that can be done about it?"

"There's somethin' funny about this," stated the elephant person suspiciously, giving me a look which was practically the same as an invitation to come out in the alley. "Things are gettin' to a hell of a state of affairs when a couple o' guys can't drive a few elephants an' camels over a state highway without havin' people fall off mountains an' bum all our whisky off us."

"You're absolutely right," I agreed. "But, if it isn't getting personal, just how does it happen that you are out here in the wildest part of the Cascade Mountains with a herd of camels and elephants and no driver's license?"

"I'm the bull driver for the Great Pacific States Shows," he explained grumpily. "We got two camels and three elephants in the outfit. We showed at Sisters last night an' the boss told us to herd 'em over the Pass to Eugene to save expenses. That ain't no misdemeanor, is it?"

"No," I answered, "it's a felony. Up in Alaska they shoot people for driving elephants over the mountains. Come on over and help me bring this guy to."

Eddie had been out so long I was afraid that when he came to his shoes wouldn't fit, but by almost superhuman effort and the rest of the elephant person's flask, we finally managed to get him on his feet and headed up the Pass. Three quarters of an hour later we staggered into the cabin and made a fire. We cooked our supper with hands that shook so badly that every time we paused to light a cigarette it looked as if we were trying to wigwag each other. We crawled into our sleeping bags as soon as we had finished eating. Neither of us had much to say and we both realized we would never be able to tell the yarn around camp. Talk about scandals! It would be worse than the time when Eddie and I had shot at a porcupine and the porky charged us, and it wasn't a porcupine and we had to bury our clothes and live in the woods for three days.

We reached camp the next night showing signs of wear and hard usage. Neither of us to date has made any attempt to explain how one simple little over-night hiking trip came to make us look like that.

CRANBERRY GLADES

(*Continued from page* 364)

the glades was heavily plastered with lichens and the branches were conspicuously bearded with pendant, fruticose forms. The trailing swamp blackberry is everywhere abundant, and its long prostrate stems bearing a profusion of glossy leaves described some very pretty, green tracing on the dull-colored carpet of lichens.

As we explored the region more widely we found that this first glade known as the Big Glade, was only one of a series of glades. Evidently the old mountain lake that once occupied this depression had a rather uneven bottom, so that shallows and deeps occurred. The shallow places were filled in earlier and in these situations the succession of plant life has advanced to the alder stage, while those places in which the filling in required a longer period of time, are today the open glades. So each time we passed from one glade to another we had to fight our way through an alder thicket, and each glade encountered was found to be in a different stage of development. All of these glades bear local names; one that contains a very dense growth of swamp rose (*Rosa carolina*) is called the Rose Glade. A glade with a circular outline, is known as Round Glade. In this glade there are numerous huge cushions or mounds of the tall pigeon-wheat moss (*Polytrichum strictum*). Some of these cushions were three feet high and slabs cut from them showed clearly how the successive yearly growth of these moss plants gradually builds up the conspicuous mounds of moss.

It has been estimated that the entire region occupied by all of these glades covers an area of 800 acres. This land including that of the adjacent mountain slope was then owned by the Campbell Lumber Company, the organization responsible for the cutting of the original forest. A small number of cattle, horses, and sheep are permitted to range the area but the grazing is very light and apparently it is interfering in no way with the progress of natural reforestation on the slopes surrounding the open glades.

At the upper end of the glade region was a small eminence rising some 200 feet above the level of the glades. Originally this must have been an island lying near the margin of the old mountain lake for we found here a pure stand of sugar maple (*Acer saccharum*), an association which does not occur elsewhere in any of this region that may properly be considered a part of the glade territory. Beneath these trees there were no shrubs at all and the vegetation of the forest floor consisted of such herbs as are commonly found in the typical maple forest. Evidently no cutting of trees had ever taken place here for there was no evidence of stumps or fallen timber, and the general cleanliness of the place suggested the appearance of a well-kept picnic woods.

To the north of this "island" on the opposite side of the river there was a tract

of raised land that sloped gradually to the floor of the Big Glade; this area is known locally as the Red Banks because of the red color of the soil. Here we found an interesting display of hawthornes. The sloping land of the Red Banks was fairly even and covered with a good turf. The hawthorne trees were widely spaced and the whole appearance was that of a savannah. We were so impressed with this characteristic appearance that we dubbed the place a "Crataegus Savannah." There occurred here only a very few trees of other species, and few species were represented.

We indulged in some speculation as to the history of this particular area but our interpretation may be little more than conjecture. We assumed that at a very early time the original forest had been removed from this particular tract in order to clear the land for tillage or grazing, or the area may have been burned over to establish a deer pasture. Later the region was abandoned, and the hawthornes then invaded it to create the aspect of a savannah as it appears today. These hawthorne trees have been growing here for many years for they have attained unusual size. Many of them range from thirty to forty feet in height and some have a trunk diameter of more than twenty inches.

We found the animal life varied and abundant. As we walked along the old log-road beds that were built rather extensively through the region in the lumbering days, we frequently saw where the cross ties had been dug out of the ground and overturned by bears searching for grubs. It was a common experience to come upon the trail of a bear, made evident by the way in which the bushes and other plants had been bent over and even broken by his heavy body, and also by the imprint of the plantigrade foot in the soft mud. One day we discovered a large deadfall that had recently been built, and later we learned that Johnny Roberts had constructed it to catch a bear accused of stealing three of his sheep. Although we did not see any bear during our entire stay, we concluded from the evidence that they are rather plentiful in the region.

We had been told that Cranberry Glades was a veritable haven for the wild animals. It was stated that deer, red fox, wild cat, ruffed grouse, gray squirrel, rabbit, mink, and raccoon are still found here in considerable numbers. Cranberry River has for a long time enjoyed the reputation of being one of the best trout streams in the state. Our experiences confirmed these reports. Every night we were entertained by the funny little squeaks and the scampering of the flying squirrels over the roof of our shack. A wood thrush had built her nest in the low branches of a tree that stood only a short distance from our door and we visited the spot daily until one morning when the story was brought to an untimely end by a mischievous red squirrel that had robbed the nest and frightened the mother bird away.

Everywhere we went in the glades proper we could see evidences of animal life. Here and there were the remains of an unlucky crayfish that had fallen prey to some hungry bird or raccoon. In the sphagnum the burrows of small rodents were numerous. We did no trapping but some of these creatures have been trapped by other curious investigators and among the species that are known to occur here are the masked shrew (*Sorex personatus personatus*), and the smoky shrew (*Sorex fumerus*), the red backed mouse (*Evotomys carolinensis*), and the yellow-cheeked meadow mouse (*Microtus chrotorrhinus chrotorrhinus*).

To attempt to present any adequate description of the variety and quantity of the bird life of this region would require the mention of a list of birds far too extensive to permit its inclusion here. It is very doubtful if there is any other place in the state where, during the nesting season, there abounds such a marvellous display of birds. My friend, The Ornithologist, was kept busy making additions to his records. It seemed as if every tree and bush had its own private stock of warblers and the woodland was made vocal by their bewitching notes. The songs of the veery and the hermit thrush were heard frequently, and there certainly can be no music on earth or in heaven more pleasing or more exprssive than that of the hermit thrush.

The period which we had set for the exploration of the glade country passed all too quickly. In the course of the week we had seen just enough to prick our curiosity to see more, and so it was with reluctance that we turned our backs to this land of enchantment and directed our steps toward the summit of Cranberry Mountain. As we trudged up the slope, then down the other side of the mountain, and back to our car, we enumerated again and again the many features of this region that would give it first place as a wild life sanctuary.

Although we have visited this region many times since, we still think of our first visit to Cranberry Glades. As a wild life sanctuary it is improving steadily. Within recent months this entire area was purchased by the Federal Government and it now forms a part of the Monongahela National Forest. This change of ownership is a most happy one for it renders the Glades secure against commercial invasion and insures an indefinite period for the continued development of the secondary forest throughout the region. With this new outlook for the future of Cranberry Glades there comes a renewed hope that the tract may be designated by the Forest Service as a wild life refuge, thus establishing here in these mountain solitudes a permanent home for the wild life of West Virginia.

Shade Tree Men To Meet In Pittsburgh

The program of the Tenth National Shade Tree Conference, which will be held in Pittsburgh, Pennsylvania, on August 30 and 31, is full of interest. Representative and outstanding experts in the fields of arboriculture, plant pathology, entomology, horticulture and forestry will address the meeting, the sessions of which are to be held at Carnegie Institute. There will be open and timely discussion on all important phases in the field of shade tree life, the Friday morning session being wholly devoted to the elm diseases, with particular reference to the present status and danger threatened by the Dutch Elm disease.

William M. Middleton, of Washington, D. C., is President of the Conference; R. P. White, of the New Jersey Agricultural Experiment Station, is Secretary, and R. M. Weakley, of Warren, Pennsylvania, is Chairman of the local Committee in charge of the Conference this year.

DEEP SOUTH RAVENS

(*Continued from page* 349)

shadow on Enotah. Each year when the ice and snow is still on the mountain tops, choking the heads of the tiny streams, the birds choose a nesting site. Sometimes they return to the old nest and patch it. Sometimes they build anew. Always they choose a northern slope, exposed to the face of the wind. They lay their eggs in the dead of winter, and Boreas has not retired to blow his breath across more northern waste-lands when the young are hatched.

Theirs then to survive the cold breath of the last winter days, the danger of prowling creatures of the hunt, the cat, the fox and the weasel, until spring has come. Then they fly away and disappear, and the parent birds leave their domestic duties to explore the hinterlands of the southern Blue Ridge until time comes to rear another family.

Where the young go seems to be a matter of mystery. This pair of old birds has been seen close to the heart of Enotah since time immemorial, but it is the only pair known to native mountaineers. But they live alone. Protectors of the silences and the solitudes of the wastelands, they have no company.

Their inurement to cold is probably best evinced by the fact that, according to Dr. Donald B. MacMillan, famed Arctic explorer, ravens are practically the only birds wintering at Etah, the northernmost settlement in Greenland. In Georgia, when the remainder of the mountain world is suffering from the cold, the raven goes cheerfully about, raising its young. Like several other large birds, they mate for life, and each year in January or February, when the snow is on the mountain and arctic winds whistle across the barren ridges and through leafless branches of poplar and oak, they come back to a wild retreat to raise their family.

We had hardly left the top of Enotah when a thick, heavy cloud settled down behind us. We followed a winding trail down the slope, with the wind whipping at our backs. When we arrived at Zeb's house, six miles away, Doctor Phinizy glanced back.

"Look!" he exclaimed.

The mountain was covered with snow.

A few moments later Zeb came from the house, where he had gone to report the finding of the nest and to announce that after fourteen years he had made his five dollars.

WHO'S WHO

Among the Authors in This Issue

EMERSON KNIGHT (*Forest Roads*) is one of the foremost landscape architects and engineers in the West, having much to do with the trail systems of National and State Parks. He makes his headquarters in San Francisco.

Paul Hosmer

PAUL HOSMER (*Wilderness Jitters*) lives in Bend, Oregon, where he spends a good deal of his time in writing stories about lumbermen. He was formerly a newspaper reporter.

P. D. STRAUSBAUGH (*Cranberry Glades*) is Professor of Botany at West Virginia University, at Morgantown. He is a graduate of the College of Wooster, in Ohio, and also of the University of Chicago.

ROY C. BRUNDAGE (*How Farm Woods Cut Farm Costs*) is an Assistant in Forestry, Agricultural Experiment Station, Purdue University. He is engaged in marketing research work, making available to farmers and other woodland owners marketing information on farm woodland products. Since the inception of Article X of the Lumber Code, he has acted as representative from Indiana on the Forestry Advisory Committee to the North Central Hardwood Division of the Lumber Code Authority.

Charles N. Elliott

CHARLES N. ELLIOTT (*Deep South Ravens*) is located at Augusta, Georgia, where he is District Forester for the State Forest Service. He is a frequent contributor to AMERICAN FORESTS.

ETHEL ROMIG FULLER (*Comparisons*) is a well-known poetess who lives in Portland, Oregon. Mrs. Fuller is keenly aware of the wealth of material to be found in the out-of-doors, and her numerous nature poems reflect her love of beauty and the West.

CLAUDE M. KREIDER (*The Romance of the Golden Trout*) lives at Long Beach, California. When he is not writing or exploring his favorite peaks of the Sierras, he is fishing for Golden Trout.

CAROLINE B. SHERMAN (*Wood-using Industries in Community Life*) is Associate Agricultural Economist, of the United States Department of Agriculture, located in Washington, D. C.

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The American Forestry Association

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What the Association Is Working For

ADEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in cooperation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production or the protection of streamflow; more extensive PLANTING OF TREES by individuals, companies, municipalities, states, and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.